Report on the Marine and Freshwater Crustacea from Franz-Josef Land, collected by Mr. William S. Bruce, of the Jackson-Harmsworth Expedition.

By Thomas Scott, F.L.S., Naturalist to the Fishery Board for Scotland.

[Read 15th December, 1898.]

(Plates 3–9.)

Through the kindness of Mr. W. S. Bruce I have had the privilege of examining the Crustacea which he collected in Franz-Josef Land during his sojourn there in 1896 and 1897.

It was with some hesitation that I undertook the examination of this interesting collection. Fortunately, however, a large number of the organisms contained in it were already more or less familiar to me, either as recent or fossil species, and therefore the examination, though arduous, was less so than it would otherwise have been. Prof. G. S. Brady and the Rev. T. R. R. Stebbing have kindly assisted me with the identification of certain doubtful species; while my son, Mr. Andrew Scott, gave me valuable help with the examination of the Copepoda, and by the preparation of a number of drawings necessary for the elucidation of some apparently new forms, and for the confirmation of others which, though already described, have not before been recorded from the Arctic seas.

It was necessary, in describing the results of my examination, to adopt some recognized method in classifying them, and the general arrangement which I have followed is that proposed by the Rev. T. R. R. Stebbing in his 'History of Crustacea,' * and exhibited in the synoptical table at page 49. In this table the Crustacea are divided into four Subclasses, viz.: the Malacostraca, Entomostraca, Gigantostraca, and Thyrostraca (or Cirripedia). The collection of Crustacea made by Mr. Bruce has been found to contain representatives of the first, second, and last of these Subclasses; and I now proceed to indicate briefly the number of the species that belong to each of these three subdivisions.

(1) The Malacostraca.

The Malacostraca, which comprise what are otherwise called the higher Crustacea, are still further subdivided into the two

* Internat. Sci. Ser. vol. lxxiv. (London, 1893).

Orders—PODOPHTHALMA (or Stalk-eyed Crustacea) and EDRIOPHTHALMA (or Sessile-eyed Crustacea). The first was represented in Mr. Bruce's collection by seven species, five of which belong to the smaller Macrura and two to the Schizopoda: there were no representatives of the larger Brachyura in the collection. But if the Stalk-eyed Crustacea are few in number, the Sessile-eyed forms are fairly numerous: they comprise Cumacea, of which there are five species; Isopoda, represented by twelve; and Amphipoda, of which there are forty-six species.

(2) The ENTOMOSTRACA.

The Entomostraca are divided into three Orders, but the first of these, Brachiopoda, is not represented in the collection; there are, however, numerous examples of Ostracoda and Copepoda. Thirty-four species of the former and sixty-six of the latter, with one new variety, have been obtained, and are recorded in the sequel.

(3) The THYROSTRACA or CIRRIPEDIA.

The only Cirripedia found in the collection are two species of Barnacles, both of which are widely distributed in the northern seas.

Perhaps the preceding statements may be more clearly understood if put into tabular form, thus:—

TABLE showing the general classification and number of the species of Crustacea contained in Mr. Bruce's Collection of Crustacea from Franz-Josef Land.

Subclass.	Order.	Suborder.	Number of species.
MALACOSTRACA.	Podophthalma ("Stalk-eyed" Crustacea)	Macrura	5
		Schizopoda	2
	Edriophthalma ("Sessile-eyed" Crustacea)	Cumacea	5
		Isopoda	12
		Amphipoda	46
ENTOMOSTRACA.	Ostracoda	Podocopa	32
		Myodocopa	1
		Cladocopa	1
	Copepoda	Gnathostomata	65
		Pœcilostoma	1
		Siphonostoma	1
CIRRIPEDIA.	Thoracica	Operculata	2

It will be observed from this table and from the preceding remarks that the collection of Crustacea brought home by Mr. Bruce, though it does not contain any of the larger Brachyura, is particularly rich in the smaller forms; indeed, though twelve suborders are represented in the collection, by far the largest number of species belong to only three of these. The total number of species is 173, but 132 of them belong to the Amphipoda, Podocopa, and Gnathostomata. It may be also remarked that this collection of Crustacea exceeds in importance as well as in number of species any other previously brought from Franz-Josef Land, except perhaps in the number of the larger forms.

Of the species above enumerated, three, represented each by a single specimen, are reserved for further investigation—one being a very small Macruran of the family Hypolytidæ, and the other two minute Cumacea, probably new.

In the following detailed list the locality where each species was obtained in Franz-Josef Land is given, except in the case of a few that are comparatively common. Notes on the distribution of species are occasionally added, and especially of those that have been observed in the British seas. Descriptions of several apparently new species will also be found in the sequel. A list of works that have been specially consulted in the preparation of this report is added.

The majority of the specimens were collected in the vicinity of Cape Flora and Cape Gertrude, Northbrook Island; Elmwood, which is also frequently mentioned, is situated near to Cape Flora. Northbrook Island is somewhat **V**-shaped: one branch extends in a north-by-west direction, about 15 miles from Barents Cape; the other branch, which is nearly 40 miles in length, extends almost due west; and Cape Gertrude, Elmwood, and Cape Flora are all situated at the western extremity of this lower branch. Northbrook Island is one of the most southerly of the Franz-Josef Land group, and while the lower branch which terminates in Cape Flora is somewhat under the 80th degree of North latitude, the other reaches to some distance beyond that.

MALACOSTRACA.

MACRURA.

(Tribe Caridea.)

Genus Spirontocaris, *Spence Bate*, 1888.

Spirontocaris gaimardii (*Milne-Edwards*). (Pl. 3. figs. 1, 2.)

1837. *Hippolyte Gaimardii*, Milne-Edwards (**26**), p. 378.

The Bruce collection contained a single adult female with ova; it was taken about two-thirds of a mile south-west of Elmwood, in 18 fathoms water, on June 7th, 1897. The length of this specimen was about 62 millim.; the armature of the rostrum consisted of seven teeth on the upper, and five on the lower edge, as shown in the figure (fig. 1).

(?) Spirontocaris Phippsii (*Kröyer*). (Pl. 3. figs. 3, 4.)

1841. *Hippolyte Phippsii*, Kröyer (**42**), p. 575.

A single specimen of this species was dredged in 8 fathoms, off West Bay, Cape Flora, on July 24th, 1897. Kröyer states that in this species there are four teeth on the front part of the lower margin of the rostrum, but in this specimen there are seven teeth; the first three (counting from the apex of the rostrum) are each somewhat stouter than the next four and are moderately wide apart, the fourth, fifth, and sixth are close together, while between the sixth and seventh there is an interval about equal to that between the third and fourth as shown by the drawing (fig. 3). But though the Cape Flora specimen differs from the typical *S. phippsii* in this respect, it seems to agree with it otherwise; variation in the number of the teeth of the rostrum amongst the group of crustaceans to which this one belongs is not uncommon.

Spirontocaris polaris (*Sabine*).

1824. *Alpheus polaris*, Sabine (**65**), p. 238, pl. 2. figs. 5–8.

There were several specimens of this species in the Bruce collection, some of them being females with ova. Considerable variation was observed in the number of teeth on the upper and lower margins of the rostrum; on the upper margin the number varied from four to seven, and on the lower margin from one to three. All the specimens were taken in the vicinity of Elmwood at the western extremity of Northbrook Island, and mostly

during June and July 1897. One was taken on floe-ice, but the others were dredged in depths ranging from 5 to 19 or 20 fathoms. The variation in the armature of the rostrum may b thus indicated:

$$(1)\,\frac{7}{3},\ (1)\,\frac{6}{1},\ (1)\,\frac{5}{3},\ (2)\,\frac{5}{2},\ (1)\,\frac{4}{3},\ \text{and}\ (1)\,\frac{4}{2};$$

the number within parentheses indicates the number of specimens, while the number above and the number below the line indicates the number of teeth on the upper and lower margins of the rostrum. One of the specimens in which the arrangement of the teeth of the rostrum is represented by $\frac{5}{2}$, measured 65 millim. in length.

Genus Sclerocrangon, *Sars*, 1882.

Sclerocrangon boreas (*Phipps*).

1774. *Cancer boreas*, Phipps (**61** *a*), p. 190, t. 12. fig. 1.

This was represented by one specimen, which was taken in ten fathoms, off West Glacier in Günther Sound, on September 9th, 1896.

SCHIZOPODA.

Genus Thysanoessa, *Brandt*, 1851.

Thysanoessa (?) neglecta (*Kröyer*).

1842. *Thysanopoda neglecta*, Kröyer (**44**), pl. 7. figs. 3 *a–d*.

Three specimens of *Thysanoessa* were included in the collection from Franz-Josef Land: one was obtained in West Bay, Cape Flora, on September 9th, 1896, and two near East Glacier, Cape Flora, on August 1st, 1897. The specimens appeared to belong to *T. neglecta*, but were scarcely perfect enough to enable the species to be satisfactorily determined.

Genus Mysis, *Latreille*, 1803.

Mysis oculata (*Fabricius*).

1780. (?) *Cancer oculatus*, O. Fabricius (**28** *a*), n. 222, p. 245.

A considerable number of specimens of this *Mysis* were included n the Bruce collection. Various stages of development were represented, but the majority of the specimens were adult. They appear to have been all captured at the west end of Northbrook Island, in the vicinity of Cape Flora. Several

were taken in September 1896, but the largest portion were collected between the 4th and 23rd of June, 1897; they were dredged in from two to three fathoms water off West Point, Cape Flora. A specimen of *Dajus mysidis* was observed on two of the adult *Mysis*.

CUMACEA.

Genus Diastylis, *Say*, 1818.

Diastylis Rathkii (*Kröyer*).

1841. *Cuma Rathkii*, Kröyer (42), pp. 513 & 531, t. v–vi. figs. 17–30.

This species is represented by a single specimen—a female—taken near East Glacier, Cape Flora, on August 1st, 1897.

Genus Lamprops, *Sars*, 1863.

Lamprops fuscata, *G. O. Sars*.

1865. *Lamprops fuscata*, G. O. Sars (69), p. 192.

L. fuscata was represented by a number of specimens, most of which were dredged in West Bay in from two to ten fathoms. This has been recorded from a few places in Greenland by Hansen and G. O. Sars.

Genus Petalosarsia, *Stebbing*, 1893.

Petalosarsia ? declivis (*G. O. Sars*).

1865. *Petalopus declivis*, G. O. Sars (69).

A single specimen that seems undoubtedly to belong to this species was obtained in some material dredged in ten fathoms about two-thirds of a mile south-west of Elmwood, Cape Flora, in January 1897. *Petalosarsia declivis*, though somewhat rare, appears to have a wide distribution; it has been recorded from Norway, as well as from the British seas. *Petalosarsia* has also been recorded from Spitzbergen.

ISOPODA.

The names and arrangement of the Isopoda are as far as possible in conformity with the second volume of Prof. G. O. Sars's new work on the Crustacea of Norway.

Genus Typhlotanais, *G. O. Sars*, 1880.

Typhlotanais finmarchicus, *G. O. Sars*. (Pl. 3. figs. 5–7).

1880. *Typhlotanais finmarchicus*, G. O. Sars (72), p. 36.

Several specimens of this Isopod were included in the Bruce collection; they occurred chiefly amongst dredged material from West Bay, Cape Flora; a few were also taken amongst sand near East Glacier, in the vicinity of Cape Flora. Prof. Sars discovered the species "many years ago, rather plentifully in the Harbour of Vadsö at a depth of 30 fathoms." One of the largest of the specimens in the Bruce collection measured about 2·3 millimetres. Besides the other characters that distinguish this species, the meral joints of the last three pereiopoda are furnished with one (or two) minute but distinct spines near the end of the inside margin (see fig. 6).

Genus Leptognathia, *G. O. Sars*, 1880.

Leptognathia longiremis (*Lilljeborg*).

1865. *Tanais longiremis*, Lilljeborg (**49**), p. 23.

A specimen of this species was obtained in a gathering of Crustacea from the vicinity of Cape Flora. The dactylus of the chelæ was not so distinctly serrate on the superior aspect as Scottish examples. This Isopod "occurs along the whole Norwegian coast from Vadsö to Christiania;" I also have it from various parts of the Scottish coast.

Genus Pseudotanais, *G. O. Sars*, 1880.

Pseudotanais forcipatus (*Lilljeborg*). (Pl. 3. figs. 8, 9.)

1865. *Tanais forcipatus*, Lilljeborg (**49**), p. 16.

This species was represented in the collection by a single specimen dredged in Günther Sound at a depth of ten fathoms on September 9th, 1896. The form of the chelæ (fig. 8) readily distinguishes this from other species of *Pseudotanais*. *P. forcipatus* is also represented in the British fauna; it was moderately frequent in a gathering of small Crustacea collected in the Moray Firth in 1895.

Genus Gnathia, *Leach*, 1814.

Gnathia elongata (*Kröyer*).

1842. *Anceus elongatus*, Kröyer (**44**), pl. 30. figs. 3 *a–g*.

A single specimen of a female *Gnathia*, apparently belonging to this species, was obtained in some dredged material collected in

lat. 77° 55′ N., long. 53° 20′ E., on July 13th, 1897. The distribution of *G. elongata* seems to be chiefly arctic.

Genus Janira, *Leach*, 1814.

Janira tricornis (*Kröyer*).

1842. *Henopomus tricornis*, Kröyer (**44**), pl. 30. figs. 2 *a–q*.

A somewhat imperfect specimen of *Janira tricornis* was taken in the vicinity of Cape Mary Harmsworth in from 53 to 93 fathoms on August 7th, 1897 (Cape Mary Harmsworth lies between 30 and 40 miles further north and nearly 100 miles further west than Cape Flora).

Genus Munna, *Kröyer*, 1839.

Munna Fabricii, *Kröyer*. (Pl. 3. figs. 10, 11.)

1842. *Munna Fabricii*, Kröyer (**44**), pl. 31. figs. *a–q*.

A single specimen was dredged in 30 fathoms off East Glacier, Cape Flora, on July 21st, 1897. (Fig. 10 is a drawing of the superior antenna.)

Munna Kröyeri, *Goodsir*. (Pl. 3. figs. 12–14.)

1842. *Munna Kröyeri*, Goodsir (**33**), p. 365, pl. 6. fig. 2.

A few specimens of a *Munna*, apparently belonging to this species, occurred in gatherings of small Crustacea dredged in the vicinity of Cape Flora.—One specimen was taken with the dredge in 15 fathoms one mile off Flora Cottage, on September 10th, 1896; others were dredged at West Bay and off Cape Gertrude in July 1897, in from 5 to 30 fathoms.

Genus Pleurogonium, *G. O. Sars*, 1871.

Pleurogonium inerme, *G. O. Sars*.

1883. *Pleurogonium inerme*, G. O. Sars (**73**), p. 67, pl. 2. fig. 5.

Two female specimens of this species (with ova), and three others, probably males of the same species, were dredged off East Glacier, Cape Flora, in 30 fathoms. The three (?) males were narrower in general outline than the female, but resembled them otherwise.

Pleurogonium spinosissimum, *G. O. Sars*. (Pl. 3. fig. 15.)

1865. *Pleurocantha spinosissimum*, G. O. Sars (**71**), p. 30.

Two specimens, undoubtedly belonging to this species, were

taken at the same place and time as *P. inerme*. The drawing (fig. 15) represents the more perfect of the two specimens. The late Dr. Robertson of Cumbrae has recorded this species from the Firth of Clyde.

Genus Munnopsis, *M. Sars*, 1860.

Munnopsis typica, *M. Sars*.

1860. *Munnopsis typica*, M. Sars (67), p. 84.

The Bruce collection contained several specimens of *Munnopsis typica*; they were collected chiefly in the vicinity of Cape Flora—such as, a quarter of a mile west of the flagstaff, on July 2nd, 1897 (this specimen was taken in the surface tow-net); off East Glacier in 30 fathoms, on the 21st of July and again on August the 1st; and off West Point in 2 to 3 fathoms in July. A specimen was also taken at about two-thirds of a mile south-west of Elmwood on April 29th, 1897, in 18 fathoms. Some of the specimens were considerably damaged, but a few were very complete. Heller also records *Munnopsis typica* from Franz-Josef Land.

Genus Dajus, *Kröyer*, 1846.

Dajus mysidis, *Kröyer*.

1846. *Dajus mysidis*, Kröyer (47), pl. 28. fig. 1 A–B.

Two specimens of this parasite were observed; they were adhering to specimens of *Mysis oculata*, being attached to the underside of the thorax between the posterior swimming-feet.

Genus Podascon, *Giard & Bonnier*, 1895.

Podascon Stebbingi, *Giard & Bonnier*.

1895. *Podascon Stebbingi*, Giard & Bonnier (29), p. 462.

A few specimens of an Epicaride occurred amongst gatherings of small Crustacea dredged in West Bay, off West Point, and off East Glacier (all in the vicinity of Cape Flora). This Epicardie agrees very closely with a form recorded by Rev. Mr. Stebbing from the Arctic seas, and which Professors Giard and Bonnier describe under the above name in their memoir on Epicarides published in the 'Bulletin Scientifique de la France et de la Belgique,' tome xxv. (1895).

AMPHIPODA.

This suborder of the Edriophthalma was represented in the Bruce collection by a considerable number of species, and some of the species, such as *Anonyx nugax*, *Onesimus Edwardsii*, and *Gammarus locusta*, by many individual specimens. Prof. G. O. Sars's recent work on the Amphipoda of Norway is generally followed in the arrangement and names of the species.

HYPERIIDEA.

Genus HYPERIA, *Latreille*, 1825.

HYPERIA GALBA (*Montagu*).

1815. *Cancer gammarus galba*, Montagu (**53** *a*), p. 4, pl. 2. fig. 2.

A single specimen of *Hyperia galba* was taken in West Bay, Cape Flora, on July 5th, 1897. According to Prof. Sars, the distribution of this species extends from the Arctic seas to the coasts of Britain and France.

Genus PARATHEMISTO, *Boeck*, 1870.

PARATHEMISTO OBLIVIA (*Kröyer*).

1838. *Hyperia oblivia*, Kröyer (**41**), p. 70, pl. 4. fig. 19.

A number of specimens of this Amphipod were obtained on the sand near East Glacier, Cape Flora, on August 1st, 1897. (No specimen of *Euthemisto libellula* (Mandt), so frequent and widely distributed in the Arctic sea, was contained in this collection.)

GAMMARIDEA.

Genus ORCHOMENELLA, *G. O. Sars*, 1890.

ORCHOMENELLA MINUTA (*Kröyer*).

1846. *Anonyx minutus*, Kröyer (**47**), 2 R. 2 B, p. 23.

A single example of this species was captured in about one to two fathoms at West Bay, near Cape Flora, on August 20th, 1896, and another near the same place on June 6th, 1897.

Genus ANONYX, *Kröyer*, 1838.

ANONYX NUGAX (*Phipps*).

1774. *Cancer nugax*, Phipps (**61** *a*), p. 192, pl. 12. fig. 3.

A considerable number of specimens of all ages and sizes were

contained in the Bruce collection; most of the specimens were collected in the neighbourhood of Cape Flora, especially about two-thirds of a mile south-west of Elmwood. Some were collected in January 1897, and others during April, May, June, and July. Several of the specimens were of large size: Prof. Sars states that 40 millim. is about the maximum length of Arctic specimens; one or two of the largest in the Bruce collection measured from 40 to 42·5 millim.

Anonyx nugax seems to be one of the more commonly distributed species in the Arctic seas. Prof. Sars (*loc. cit.*) gives Franz-Josef Land among the places mentioned in his note on the distribution of the species. I have obtained on two separate occasions in the Firth of Forth what is certainly the same species.

Genus Hoplonyx, *G. O. Sars*, 1890.

Hoplonyx similis, *G. O. Sars*. (Pl. 9. figs. 11–13.)

1890. *Hoplonyx similis*, G. O. Sars (**75**), p. 93, pl. 33. fig. 1.

A single adult female specimen (with ova) of an Amphipod which I ascribe to this species was taken about two-thirds of a mile south-west of Elmwood, in 18 fathoms water, on May 22nd, 1897. At first I thought it might be a specimen of *Hoplonyx cicada* (Fabricius), as that is said to be a widely distributed species in the Arctic Seas, but a more careful examination showed that the form of the fourth coxal plates (fig. 11) and of the last epimeral plates (fig. 12) differed from those of that species, while they agreed very closely with those of *H. similis*, G. O. Sars. In this specimen the integument is ornamented with numerous circular depressions as exhibited by the figures.

Genus Pseudalibrotus, *Della Valle*.

* Pseudalibrotus littoralis (*Kröyer*).

1845. *Anonyx littoralis*, Kröyer (**46**), 2 R. 1 B. p. 621.

This species was obtained by Mr. Bruce on several occasions,

* Prof. Sars, in 'Crustacea of Norway,' vol. i. p. 102, expresses some doubt as to whether M.-Edwards's generic name *Alibrotus* is correctly applied to this northern form, but he does not propose any substitute for it. More recently, however, Della Valle instituted a new genus, *Pseudalibrotus*, for Kröyer's species, and I have adopted this name here.

and usually in comparatively shallow wateror on the shore; it appeared to be one of the more common of the Franz-Josef Land Amphipoda. The following are some of the localities where it was obtained:—West Bay, Cape Flora, in 2 to 3 fathoms, on the 22nd and 25th August, and off Flagstaff Point, Elmwood, on the 19th September, 1896. Fifty yards off West Point, Cape Flora, in 2 to 3 fathoms, on July 7th; and on sand near East Glacier, Cape Flora, on August 1st, 1897. A few days afterwards, viz. on the 7th of August, the same species was taken on the shore at Cape Mary Harmsworth. Prof. G. O. Sars (*loc. cit.*) also records the species from Franz-Josef Land.

Genus Onesimus, *Boeck*, 1870.

Onesimus Edwardsii (*Kröyer*).

1846. *Anonyx Edwardsii*, Kröyer (**47**), 2 R. 2 B. p. 1.

This species was also represented by numerous specimens in the Bruce collection; it was taken at the surface of the water and at various depths down to 26 fathoms. In 1896 it was obtained at West Bay, Cape Flora, in 2 to 3 fathoms water, on the 22nd of August, and at about a mile off Flora Cottage in 15 fathoms on the 10th September. *Onesimus Edwardsii* was taken on several occasions during 1897; the first record of it for that year is on January 11th, when specimens were collected about two-thirds of a mile south-west of Elmwood, others were afterwards collected near the same locality during April, May, and June. The species also occurred in other places, but they were all in the neighbourhood of Cape Flora, near the western extremity of Northbrook Island. This is also one of the species recorded by Prof. Sars from Franz-Josef Land.

Genus Amphilochus, *Spence Bate*, 1862.

Amphilochus oculatus, *Hansen*.

1887. *Amphilochus oculatus*, Hansen (**36**), p. 89, pl. iii. figs. 2–2 *c*.

Only one or two specimens of this comparatively small species were observed in the Bruce collection; they occurred in a gathering of material dredged in 2 to 10 fathoms in West Bay, Cape Flora, on July 2nd, and off Cape Gertrude in 30 fathoms on July 21st, 1897.

Genus Gitana, *Boeck*, 1870.

Gitana Sarsii, *Boeck*.

1870. *Gitana Sarsii*, Boeck (6), p. 52.

A single specimen of this species occurred in a gathering of Microcrustacea dredged off East Glacier, in 30 fathoms, July 21st, 1897.

Genus Metopa, *Boeck*, 1870.

Metopa pusilla, *G. O. Sars*.

1890. *Metopa pusilla*, G. O. Sars (75), p. 256, pl. 90. fig. 1.

One or two specimens of a *Metopa* apparently belonging to this species were obtained off East Glacier, at a depth of 30 fathoms, and off Cape Gertrude, on July 21st, 1897.

Metopa sinuata, *G. O. Sars*.

1890. *Metopa sinuata*, G. O. Sars (75), p. 263, pl. 92. fig. 2.

This species was represented by a single specimen which was dredged off Cape Mary Harmsworth, in 53 to 93 fathoms, on August 7th, 1897.

Metopa neglecta, *Hansen*.

1887. *Metopa neglecta*, Hansen (36), p. 96, pl. iii. figs. 9–9 *c*.

This species was obtained in the same gatherings with *M. pusilla* and was represented by only one or two specimens.

All these three species of *Metopa* have already been recorded from the Arctic seas, but not from Franz-Josef Land.

Genus Parœdiceros, *G. O. Sars*, 1890.

Parœdiceros lynceus (*M. Sars*).

1858. *Œdiceros lynceus*, M. Sars (66 *a*), p. 143.

This species, which is widely distributed in the Arctic seas, occurred very sparingly in the Bruce collection. It was first taken September 10th, 1896, about a mile off Flora Cottage, in 15 fathoms, and it also occurred amongst some material dredged in West Bay, Cape Flora, in 2 to 10 fathoms, on July 2nd, 1897.

Genus Monoculodes, *Stimpson*, 1853.

Monoculodes borealis, *Boeck*.

1870. *Monoculodes borealis*, Boeck (6), p. 88.

Two specimens of *M. borealis* occurred in the Bruce collection;

they were obtained in West Bay, Cape Flora, in 2 to 3 fathoms, in July 1897. This species has been taken in the Firth of Clyde.

Monoculodes latimanus (*Goës*).

1866. *Œdiceros latimanus*, Goës (**32**), pl. ii. fig. 23.

A single specimen of an Amphipod apparently belonging to this species was obtained amongst some dredged material from West Bay, Cape Flora; it seemed to differ slightly from *M. latimanus* in the form of the rostrum, but it otherwise agreed very well with that species.

Monoculodes Schneideri, *G. O. Sars.*

1895. *Monoculodes Schneideri*, G. O. Sars (**75**), p. 692, pl. vi. (Suppl.) fig. 1.

This pretty species was represented in the Bruce collection by a considerable number of specimens; they mostly occurred in the one gathering dredged in the vicinity of West Bay in 2 to 10 fathoms.

Genus Monoculopsis, *G. O. Sars*, 1891.

Monoculopsis longicornis (*Boeck*).

1870. *Monoculodes longicornis*, Boeck (**6**), p. 85.

A single specimen of *Monoculopsis* was obtained in the gathering containing *M. Schneideri* from West Bay. This species has a superficial resemblance to *Perioculodes longimanus*, but the gnathopods, and especially the first pair, differ considerably. I have this species also from Baffin's Bay.

Genus Bathymedon, *G. O. Sars*, 1891.

Bathymedon obtusifrons (*Hansen*).

1887. *Halimedon obtusifrons*, Hansen (**36**), p. 116, pl. v. fig. 1.

A single specimen of an Amphipod which I identify as *Bathymedon obtusifrons* (Hansen) was obtained in the same gathering as the two species last recorded.

Genus Aceros, *Boeck*, 1860.

Aceros phyllonyx (*M. Sars*).

1858. *Leucothoë phyllonyx*, M. Sars (**66 a**), p. 148.

A specimen of this species was included in the Bruce collection,

but was taken a considerable distance to the south of Franz-Josef Land. It was dredged in lat. 77° 53′ N., long. 53° 16′ E. (or almost midway between Novaya Zemlya and Northbrook Island), and at a depth of 130 fathoms. Heller records this species from Franz-Josef Land.

Genus Acanthostepheia, *Boeck*, 1870.

Acanthostepheia Malmgreni (*Goës*).

1865. *Amphithonotus Malmgreni*, Goës (**32**), p. 10, fig. 17.

This species was represented by a single specimen dredged in the vicinity of West Bay, in from 2 to 10 fathoms, on July 2nd, 1897. Mr. Stebbing records *Acanthostepheia* from lat. 75° 14′ N., long. 44° 26′ E., as well as from other parts of Barents Sea; it has also been recorded from Stor Fjord and other parts of the Spitzbergen coast by Goës, and from West Greenland by Hansen. The peculiar conformation of the eyes in this species gives it a somewhat *outré* appearance.

Genus Paramphithoë, *Bruzelius*, 1859.

Paramphithoë pulchella (*Kröyer*).

1846. *Amphithoë pulchella*, Kröyer (**47**), pl. 10. fig. 2.

Two specimens were captured with the dredge off West Bay, Cape Flora, at a depth of about 8 fathoms, on July 24th, 1897. *Paramphithoë pulchella*, though widely distributed, seems to be scarce in the Arctic seas; but appears to be more or less common on the west and north of Norway.

Paramphithoë bicuspis (*Kröyer*).

1838. *Amphithoë bicuspis*, Kröyer (**41**), p. 273, pl. 2. fig. 10.

This species was obtained amongst some small Crustacea dredged in West Bay, in from 2 to 10 fathoms, on July 2nd, 1897. This species is widely distributed in the Arctic seas, and is also included in the British fauna.

Paramphithoë monocuspis, *G. O. Sars*.

1892. *Paramphithoë monocuspis*, G. O. Sars (**75**), p. 351, pl. 123. fig. 2.

The most prominent difference between this and *P. bicuspis* is that suggested by the name—this species having only one dorsal

cusp instead of two. The species otherwise are closely related; but as the difference referred to appears to be fairly constant, and as there are one or two points in which a disagreement between the two forms is observed, it is more satisfactory to regard this as a distinct species than simply as a variety. Moreover, both forms have an extensive distribution. *P. monocuspis* is represented in the collection of Franz-Josef Land Crustacea by two specimens, one of which was obtained off Bear Berg, in about 10 fathoms, on September 27th, 1896; and the other about one mile off Flora Cottage, in 15 fathoms, on the 10th of the same month. Prof. Sars records the species from Greenland and from Norway; and it is also a member of the British fauna.

Genus Parapleustes, *Buchholz*, 1874.

Parapleustes glaber (*Boeck*).

1860. *Amphithopsis glaber*, Boeck (**4**), p. 662.

This species is represented by a single specimen captured off Bear Berg, in 10 fathoms, on September 27th, 1896. It has been recorded from various other Arctic localities, and south as far as Christiania Fjord and the Kattegat.

Genus Acanthonotosoma, *Boeck*, 1876.

Acanthonotosoma cristatum (*Owen*).

1835. *Acanthonotus cristatus*, Owen (**61**), p. 90, pl. B. figs. 8–12.

This species is included in the collection of Crustacea from Franz-Josef Land, but was dredged somewhat to the south of that Archipelago in lat. 77° 53′ N., long. 53° 20′ E., at a depth of 130 fathoms, on July 11th, 1897. Goës records this from Spitzbergen, Hoek from Barents Sea, and Hansen from the Kara Sea; while Mr. Stebbing records the occurrence of a specimen from lat. 75° 14′ N., long. 44° 26′ E., from a depth of 130 fathoms. Goës's Spitzbergen Station (Heenloopen Strat) is somewhat farther north than that of Mr. Bruce.

Genus Syrrhoë, *Goës*, 1865.

Syrrhoë crenulata, *Goës*.

1865. *Syrrhoë crenulata*, Goës (**32**), p. 11, fig. 25.

This species was dredged in 15 fathoms, about one mile off

Flora Cottage, on September 10th, 1896, and off West Bay, Cape Flora, in 8 fathoms, on July 24th, 1897. *Syrrhoë crenulata* appears to be a somewhat scarce species in the Arctic seas, but seems to be more frequent off the coast of Norway.

Genus Pardalisca, *Kröyer*, 1842.

Pardalisca cuspidata, *Kröyer*.

1842. *Pardalisca cuspidata*, Kröyer (**43**), p. 153.

This species was also taken off Flora Cottage on September 10th, 1896, along with the *Syrrhoë*. One specimen only was obtained. *Pardalisca cuspidata*, although apparently scarce in the Arct seas, is, according to Sars, not uncommon off the coast of Finmark.

Genus Eusirus, *Kröyer*, 1845.

Eusirus cuspidatus, *Kröyer*.

1845. *Eusirus cuspidatus*, Kröyer (**46**), p. 501.

A single specimen of *Eusirus cuspidatus* was captured about two-thirds of a mile south-west of Elmwood on May 21st, 1897. The distribution of the species seems to be almost restricted to the Arctic seas.

Genus Rhachotropis, *S. Smith*, 1883.

Rhachotropis aculeata (*Lepechin*).

1778. *Oniscus aculeatus*, Lepechin (**48**), p. 247, pl. 8. fig. 1.

This species was represented in the Bruce collection by several specimens, which were obtained as follows:—A few specimens, all more or less immature, were taken in about 10 fathoms off West Glacier, in Günther Sound, on September 9th, 1896; an adult species was captured two-thirds of a mile south-west of Elmwood on April 30th, 1897; other specimens, more or less immature, occurred off West Point, Cape Flora, in 2 to 3 fathoms, on June 22nd; on June 26th three immature specimens were obtained south-west of Elmwood, in 18 fathoms; and on July 13th one or two more, also immature, were obtained in 4 fathoms off East Glacier, Cape Flora. Heller records this species also from Franz-Josef Land.

Genus Rozinante, *T. R. R. Stebbing*, 1894.

Rozinante fragilis (*Goës*).

1866. *Paramphithoë fragilis*, Goës (**32**), p. 524, pl. 39. fig. 16.

This Amphipod was described by Goës as a *Paramphithoë*, but it was afterwards referred by Boeck and others to *Tritropis*. As, however, this name was already in use, Prof. S. Smith, in 1883, altered it to *Rhachotropis*. Along with these changes in the name, the characters also of the genus had been modified and restricted, with the result that Goës's species was disinherited. Mr. Stebbing came to the rescue of this unfortunate Amphipod and instituted a new genus (*Rozinante*) for its reception, where it now seems to be at rest. The following are some of the localities where *Rozinante* was obtained by Mr. Bruce:— Off Flora Cottage, in 15 fathoms, September 10th, 1896; two-thirds of a mile south-west of Elmwood, in 20 fathoms, January 11th, 1897; off West Point, Cape Flora, in 2 to 3 fathoms, June 22nd; off Cape Gertrude, in 30 fathoms, July 17th; off West Bay, Cape Flora, in 8 fathoms, July 23rd and 24th; and off Cape Mary Harmsworth, in 53 to 93 fathoms, August 7th, 1897. Goës records it from Wijde Bay, on the north, and Stor Fjord on the east side of West Spitzbergen, and also from Greenland. Hansen records it also from Greenland, and Mr. Stebbing from the Kara Sea (lat. 71° 19′ N., long. 63° 34′ E.). Its distribution seems to be limited to the Arctic seas.

There seems to be considerable variation in the length of the cleft of the telson, in some instances it does not exceed one-sixth of the length, while in others it is as much as one-third.

Genus Halirages, *Boeck*, 1870.

Halirages fulvocinctus (*M. Sars*).

1854. *Amphithoë fulvocincta*, M. Sars (**66**), p. 141.

This species was represented in the Bruce collection by a considerable number of specimens; they were collected at various localities during 1896 and 1897, but chiefly in the neighbourhood of Cape Flora, near the western extremity of Northbrook Island. The following is a brief summary of the places where *Halirages fulvocinctus* was obtained:—In West Bay, Cape Flora; south-west of Elmwood, Cape Flora; off Cape Flora itself; off Cape Gertrude; near East Glacier; off West Glacier,

off Bear Berg; and off Wilczek Island. *H. fulvocinctus* appears to be a common Arctic species; it also extends "along the whole west and north coasts of Norway."

Genus Cleippides, *Boeck*, 1870.

Cleippides quadricuspis, *Heller*.

1878. *Cleippides quadricuspis*, Heller (**37**), pp. 25–40.

This species was described by Prof. Camil Heller from specimens captured during the Austrian North-Polar Expedition (1878). It was represented in the Bruce collection by a single adult specimen, which was dredged in 130 fathoms, in lat. 77° 53′ N., long. 53° 16′ E., on July 13th, 1897. In this specimen the dorsal cusps were very prominent, even more so than is shown in Heller's figure.

Genus Calliopius, *Lilljeborg*, 1865.

Calliopius læviusculus (*Kröyer*).

1838. *Amphithoë læviusculus*, Kröyer (**41**), p. 281, pl. 3. fig. 13.

A single specimen of this widely distributed species occurred among some Crustacea collected near West Point, Cape Flora, on July 5th; while a second was obtained in a gathering collected about two-thirds of a mile south-west of Elmwood on January 11th, 1897.

Genus Amphithopsis, *Boeck*, 1870.

Amphithopsis glacialis, *Hansen*.

1887. *Amphithopsis glacialis*, Hansen (**36**), p. 137, pl. 5. figs. 6–6*e*.

This species was taken off West Point, Cape Flora, in 2 to 3 fathoms, on the 20th of June; and also inshore at Cape Mary Harmsworth, on August 7th, 1897.

Genus Atylus, *Leach*, 1817.

Atylus carinatus (*Fabricius*).

1793. *Gammarus carinatus*, Fabricius (**28**), t. ii. p. 515.

The only localities where this species was obtained were off West Bay, Cape Flora, in 5 fathoms, on September 12th, 1896; and off West Point, Cape Flora, in 2 to 3 fathoms, on June 20th, 1897—one specimen being obtained at each place. *Atylus carinatus* has also been recorded for Franz-Josef Land by Miers.

Genus Amathilla, *Spence Bate*, 1863.

Amathilla homari (*Fabricius*).

1779. *Astacus homari*, Fabricius (**27**), p. 247.

This species was obtained off West Point, Cape Flora, in 2 to 4 fathoms, on two different occasions, viz., on June 22nd and July 5th, 1897.

Amathilla pinguis (*Kröyer*). (Pl. 7. figs. 14, 15.)

1838. *Gammarus pinguis*, Kröyer (**41**), p. 24, pl. 1. fig. 5.

This *Amathilla* was represented by several specimens captured in the neighbourhood of Cape Flora on different occasions during June and July, 1897. Prof. G. O. Sars states that this species ought, in his opinion, to be removed as the type of a separate genus, as it differs considerably in several points "from the typical *Amathilla*." In *Amathilla pinguis* the last epimeral plates of the metasome somewhat resemble those of *Apherusa Jurinei*.

Genus Gammaracanthus, *Spence Bate*, 1862.

Gammaracanthus loricatus (*Sabine*).

1824. *Gammarus loricatus*, Sabine (**65**), p. 131, pl. 1. fig. 7.

A single specimen of this fine species was captured about 50 yards off West Point, Cape Flora, in 2 to 3 fathoms, on June 22nd, 1897. *G. loricatus* appears, in its distribution, to be restricted to the Arctic seas, and is not even recorded from the coast of Finmark, a district that has furnished not a few Arctic forms to the fauna of Norway.

Genus Gammarus, *Fabricius*.

Gammarus locusta (*Linne*).

1767. *Cancer locusta*, Linné (**50**), p. 1055.

Numerous examples of *Gammarus locusta*, comprising all stages from embryos to adults, were included in the Bruce collection. Nearly all the specimens were from inshore, and formed part of every inshore gathering of invertebrates. Some of the specimens were of large size, while a considerable proportion of the adult females carried ova or embryos. Prof. Sars includes Franz-Josef Land in his notes on the Arctic distribution of *Gammarus locusta*.

Genus Photis, *Kröyer*, 1842.

Photis tenuicornis, *G. O. Sars.* (Pl. 7. figs. 16, 17.)

1883. *Photis tenuicornis*, G. O. Sars (73), p. 110, pl. 6. fig. 4.

This species was represented by a very few specimens collected chiefly in the neighbourhood of Cape Flora, as, for example, off Flora Cottage, in 15 fathoms, on September 10th, 1896, and off West Glacier, Günther Sound, in 10 fathoms, on September 9th, 1896. In the male of this species a row of minute spines extends in a diagonal manner across the basal joint of the posterior gnathopoda (fig. 17).

Genus Ischyrocerus, *Kröyer*, 1838.

Ischyrocerus (?) anguipes, *Kröyer.* (Pl. 7. fig. 18.)

1838. *Ischyrocerus anguipes*, Kröyer (41), p. 55, pl. 3. fig. 14.

A few specimens of an Amphipod probably belonging to this species were among the Crustacea in the Bruce collection. In the male specimens the propodos (fig. 18) differed from those of the fully developed male of *Ischyrocerus anguipes*, but this difference may be due to the specimens being scarcely mature. The following are the localities where the specimens were collected :—Off West Glacier, Günther Sound, in 10 fathoms, September 9th, 1896; and off West Point, Cape Flora, June 20th, 21st, and 22nd, 1897.

Genus Dulichia, *Kröyer*, 1845.

Dulichia spinosissima, *Kröyer.*

1845. *Dulichia spinosissima*, Kröyer (46), p. 512, pl. 6. fig. 1.

This curious species was represented by a single specimen captured about two-thirds of a mile south-west of Elmwood, at a depth of 18 fathoms, on April 28th or 29th, 1897. It appears to be restricted to the Arctic seas.

Caprellidea.

Genus Ægina, *Kröyer*, 1843.

Ægina spinosissima, *Stimpson.*

1853. *Ægina spinosissima*, Stimpson (88), p. 44.

Representatives of this species were obtained off Flora Cottage in 15 fathoms, September 10th, 1896; off West Bay, Cape

Flora, in 8 fathoms, on July 23rd or 24th, 1897; and off Cape Mary Harmsworth, in 53 to 93 fathoms, on August 7th, 1897. The largest specimen measured from rostrum to telson about 38 millimetres, and the antennules 32 millimetres, or a total length of $2\frac{4}{5}$ inches.

Genus Caprella, *Lamarck*, 1818.

Caprella septentrionalis, *Kröyer*, forma ε. parva, *Mayer*.

1838. *Caprella septentrionalis*, Kröyer (**41**), p. 90.

This species was dredged in 130 fathoms in lat. 77° 53′ N., long. 53° 20′ E. One specimen only was obtained.

Caprella microtuberculata, *G. O. Sars*.

1865. *Caprella microtuberculata*, G. O. Sars (**69**).

This species was taken in 10 fathoms, off Bear Berg, on September 28th, 1896; and off Cape Mary Harmsworth, in 53 to 93 fathoms, August 7th, 1897.

Caprella dubia, *Hansen*.

1887. *Caprella dubia*, Hansen (**36**), p. 217, pl. 4. figs. 8–8 *d*.

A specimen of this *Caprella* was dredged by Mr. Bruce, in 10 fathoms off Bear Berg, on September 28th, 1896. Dr. Hansen recorded this species in his work on the Crustacea of Greenland, and he at first described it as *Caprella microtuberculata*, G. O. Sars, var. *spinigera*; but in a postscript to the same work (p. 217) he considered that the form he had so described should rank as a species, for which he proposed the new name of *Caprella dubia*.

ENTOMOSTRACA.

OSTRACODA.

The Ostracoda contained in Mr. Bruce's collection number thirty-four species; the first four are freshwater forms, all the others are marine; the freshwater species are from ponds in the vicinity of Elmwood, at the western extremity of Northbrook Island. A pond near Cape Mary Harmsworth was also examined, but no Ostracoda were obtained in it. Three of the freshwater and one of the marine species appear to be undescribed; but all the others belong to more or less well-known forms, and are all represented in the British fauna either as recent or fossil. As

to names and arrangement of the species recorded below, I have followed the Monograph of the marine and freshwater Ostracoda of the North Atlantic and North-western Europe by Prof. G. S. Brady and the Rev. Dr. A. M. Norman.

PODOCOPA.

(a. *Freshwater.*)

Genus Cyclocypris, *Brady & Norman*, 1889.

Cyclocypris globosa (*G. O. Sars*). (Pl. 4. fig. 1.)

1863. *Cypris globosa*, G. O. Sars (68), p. 27.

Single valves of an Ostracod apparently identical with *C. globosa* were obtained in the gathering from Elmwood Pond. The valve figured measures about 1·1 millimetre in longest diameter. (This may be the *Cypria lacustris* of Lilljeborg, but the convexity of the shell is rather too great to fit that species.)

Genus Herpetocypris, *Brady & Norman*, 1889.

Herpetocypris (?) dubia, sp. n. (Pl. 4. figs. 7–11.)

The shell seen from the side is subreniform; the greatest height, which is equal to fully half the length, is situated about one-third of the entire length from the anterior end; the upper margin is considerably elevated in front of the middle; the posterior slope is gentle and slightly curved, but anteriorly the slope is more abrupt; the anterior extremity is broadly rounded; the posterior end is also evenly and gently rounded, but is rather narrower than the front end; lower margin slightly sinuated. Seen from above, ovate, widest in the middle, greatest width equal to about half the length; sides evenly curved; extremities slightly acuminate. Shell surface smooth and yellowish in colour. Length 13 mm.

This Ostracod, seen from above, somewhat resembles *Cypris crassa*, O. F. Müller, and the side view is also suggestive of the same species; but when compared with the figures of that species in Brady and Norman's Monograph, the present form, viewed laterally, is seen to be more boldly arched. It may also be noted that, when viewed laterally, *H. dubia* somewhat resembles *Candona rostrata* seen in the same position; but in that species the dorsal view is different. It is just possible that *H. dubia* may represent a somewhat immature stage of the next species.

Herpetocypris arctica, sp. n. (Pl. 4. figs. 2–6.)

Shell, seen from the side, subreniform, highest in front of the middle; greatest height equal to fully half the length, extremities broadly rounded; dorsal margin moderately arched, ventral slightly sinuated. Seen from above, ovate, tumid, greatest width situated behind the middle and nearly equal to half the length: posteriorly the sides converge in a broadly rounded curve and, where they meet, form an obtuse angle; they taper more gradually towards the anterior end, and the extremity there is slightly acuminate. Colour bluish green, ornamented with darker streaks and blotches. Length 1·9 mm.

This Ostracod, which was moderately frequent in a freshwater pond near Elmwood, Cape Flora, was collected July 30th, 1897.

Genus Candona, *Baird*, 1845.

Candona Harmsworthi, sp. n. (Pl. 3. figs. 16, 17.)

The shell, seen from the side, is somewhat subreniform; the dorsal margin is considerably elevated near the posterior end, where the anterior and posterior slopes meet and form an obtuse angle; the greatest height is equal to rather more than half the length; the front slope curves gently downwards to the evenly rounded anterior extremity; the posterior end is subtruncate and forms a slight curve from the obtuse dorsal angle downwards and backwards to where it meets the ventral margin; the ventral margin is distinctly incurved in front of the middle. The shell, seen from above, is ovate; the greatest width, which is situated behind the middle, is equal to rather more than two-fifths of the length; extremities slightly acuminate. Length 1 mm.

I have named this quite distinct species after Mr. Harmsworth, of the Jackson-Harmsworth Expedition.

Candona harmsworthi has a distant resemblance to *C. candida*, var. *claviformis*, when viewed laterally, but the dorsal view is dissimilar.

(b. *Marine Species.*)

Genus Pontocypris, *G. O. Sars*, 1865.

Pontocypris (?) hyperborea, sp. n. (Pl. 4. figs. 12–15.)

Shell, seen from the side, subreniform, dorsal margin boldly arched, being almost semicircular, height equal to half the length;

ventral margin nearly straight; anterior end narrowly rounded, posterior subangular. Seen from above ovate, the sides evenly curved; ends slightly acuminate, or forming an acute angle; width scarcely equal to half the length. Seen from the end, somewhat triangular, with the underside (the base of the triangle) slightly oblique. Surface of the shell smooth, white, with scattered opaque circular markings. Length ·9 mm.

A single dead specimen was dredged in West Bay, Cape Flora, at a depth of 2 to 10 fathoms, on July 2nd, 1897. I only provisionally ascribe this Ostracod to *Pontocypris*, for without the animal it is hardly possible to determine the genus it may belong to.

Genus Cythere, *Müller*, 1781.

Cythere marginata, *Norman*.

1862. *Cythere marginata*, Norman (**56**), p. 47, pl. 3. figs. 10–12.

Dredged one mile off Cape Flora, in 15 fathoms, September 10th, 1896. This has been recorded from Spitzbergen, Norway, and from various British localities.

Cythere limicola, *Norman*.

1865. *Cythere limicola*, Norman (**58**), p. 20, pl. 6. figs. 1–4.

Dredged off East Glacier, Cape Flora, in 30 fathoms, July 21st, 1897. This was a somewhat rare species in the Franz-Josef Land collection; it is also one of the less common of the British species. It has been recorded from Baffin's Bay by Dr. Brady, and from Norway by G. O. Sars.

Cythere globulifera, *G. S. Brady*.

1868. *Cythere globulifera*, Brady (**12**), p. 406, pl. 31. fig. 42.

This species was also rare in the collection, one or two specimens only having been observed. Dr. Norman records it from Norway, and Prof. Brady from Spitzbergen. As a recent species it is rare in the British seas, but is less rare as a post-tertiary fossil. It was taken off East Glacier with the last.

Cythere cluthæ, *Brady, Crosskey, & Robertson*.

1874. *Cythere cluthæ*, Brady, Crosskey, & Robertson (**16**), p. 153, pl. 13. figs. 16, 17.

This was also a rare species; it was taken off East Glacier, in 30 fathoms, on July 21st, 1897. *C. cluthæ* was first described from fossil specimens, but has since been obtained as a recent

species in several British localities, as the Irish Sea (Malcolmson); Loch Fyne and Stromness Harbour (mihi). Prof. G. S. Brady records it from Cape Frazer, from specimens obtained in Capt. Feilden's dredgings during Nares's Arctic Expedition.

CYTHERE SEPTENTRIONALIS, *G. S. Brady.*

1866. *Cythere septentrionalis,* G. S. Brady (**11**), p. 375, pl. 60. figs. 4 *a–f.*

This fine species was dredged one mile off Cape Flora, in 15 fathoms, on September 10th, 1896, and off East Glacier, in 30 fathoms, July 21st, 1897. Prof. Brady described the species from specimens obtained in Dr. P. E. Sutherland's dredgings at Hunde Islands, Baffin's Bay, in 60–70 fathoms.

CYTHERE TUBERCULATA (*G. O. Sars*).

1865. *Cythereis tuberculata,* G. O. Sars (**71**), p. 37.

This was dredged in 15 fathoms about one mile off Cape Flora, September 10th, 1896; also off East Glacier and off Cape Gertrude, in 30 fathoms, July 21st, 1897. It is a common and widely distributed species.

CYTHERE EMARGINATA (*G. O. Sars*).

1865. *Cythereis emarginata,* G. O. Sars (**71**), p. 38.

Dredged off Cape Flora, September 10th, 1896; also off West Point, July 5th, 1897, and on the 21st of the same month off Cape Gertrude. *C. emarginata* has been obtained in Loch Fyne, but the specimens had probably washed out from a submarine post-tertiary deposit; it has been obtained recent at Shetland.

CYTHERE COSTATA, *G. S. Brady.*

1866. *Cythere costata,* G. S. Brady (**11**), p. 375, pl. 60. figs. 50 *a–f.*

This was dredged off East Glacier, Cape Flora, in 30 fathoms, July 21st, 1897; it did not appear to be very common.

CYTHERE MIRABILIS, *G. S. Brady.*

1868. *Cythere mirabilis,* G. S. Brady (**12**), p. 415, pl. 29. figs. 7, 8.

This species was very rare in the Franz-Josef Land collections; it was dredged with the last off East Glacier. Prof. Brady records *C. mirabilis* from Spitzbergen.

CYTHERE DUNELMENSIS (*Norman*).

1865. *Cythereis dunelmensis,* Norman (**58**), p. 22, pl. 7. figs. 1–4.

Dredged in 15 fathoms, one mile off Cape Flora, September 10th, 1896, but very rare in the Franz-Josef Land collection.

Genus Cytheridea, *Bosquet*, 1852.

Cytheridea papillosa, *Bosquet*.

1852. *Cytheridea papillosa*, Bosquet (**8**), p. 42, pl. 2. figs. 5 *a–d*.

This was one of the more common species of Ostracoda in the Collection, and was obtained at several places; it was dredged off East Glacier, September 10th, 1896; at West Bay, Cape Flora, in 2 to 10 fathoms, July 2nd, 1897, and off Cape Gertrude, in 30 fathoms, on the 21st of the same month. It seems to be a common Arctic, as it is a common British species.

Cytheridea punctillata, *G. S. Brady*.

1865. *Cytheridea punctillata*, G. S. Brady (**9**), p. 189, pl. 9. figs. 9–11.

Several specimens of this Ostracod were obtained in a gathering dredged off Cape Flora, September 1896, and in another dredged off East Glacier, July 1897.

Cytheridea Sorbyana, *Jones*.

1856. *Cytheridea sorbyana*, Jones (**39**), p. 44, pl. 4. figs. 6 *a–e*.

A considerable number of examples of *Cytheridea Sorbyana* were obtained in the Franz-Josef Land collection; they occurred mostly in some material dredged off Cape Flora, September 10th, 1896. All these three *Cytherideas* have been recorded for Spitzbergen by Prof. G. S. Brady.

Genus Eucythere, *Brady*, 1868.

Eucythere declivis (*Norman*).

1864. *Cythere declivis*, Norman (**57**), p. 192.

This Ostracod occurred very sparingly in the Collection; it was dredged off Cape Gertrude and off East Glacier in July 1897.

Genus Xestoleberis, *G. O. Sars*, 1865.

Xestoleberis depressa, *G. O. Sars*.

1865. *Xestoleberis depressa*, G. O. Sars (**71**), p. 68.

This was dredged off Cape Flora, in 15 fathoms, September 1896; at West Bay, Cape Flora, in 2 to 10 fathoms, and off West Point, in 2 to 4 fathoms, on July 5th, 1897; very few specimens were observed.

Genus Cytherura, *G. O. Sars*, 1865.

Cytherura undata, *G. O. Sars*.

1865. *Cytherura undata*, G. O. Sars (**71**), p. 75.

Only a few specimens of this species were observed in the

Collection; they occurred in two gatherings—one dredged off West Point, the other off East Glacier. This has been recorded from Spitzbergen and other Arctic localities; it is also frequent as a British species.

CYTHERURA FULVA, *Brady & Robertson*.

1874. *Cytherura fulva*, Brady & Robertson (**21**), p. 116, pl. 4. figs. 1–5.

This was dredged off East Glacier, Cape Flora, at a depth of 30 fathoms, July 21st, 1897, but very few specimens were observed. This is a widely distributed species in the British seas; but it does not appear to have been recorded from the Arctic seas.

CYTHERURA CLATHRATA, *G. O. Sars*.

1865. *Cytherura clathrata*, G. O. Sars (**71**), p. 77.

This distinct and pretty species was dredged off East Glacier with the previous species, and, like it, was also rare, very few specimens being observed.

Genus CYTHEROPTERON, *G. O. Sars*, 1865.

CYTHEROPTERON LATISSIMUM (*Norman*).

1865. *Cythere latissima*, Norman (**58**), p. 19, pl. 6. figs. 5–8.

One or two specimens only of this species were observed in the Collection; they occurred in some material dredged off West Point, Cape Flora, in 2 to 4 fathoms, in July 1897.

CYTHEROPTERON PYRAMIDALE, *G. S. Brady*.

1868. *Cytheropteron pyramidale*, G. S. Brady (**12**), p. 34, pl. 5. figs. 11–14.

This was scarcely so rare as the last species; a few specimens were dredged off Cape Flora on September 9th, 1896, and off Cape Gertrude and East Glacier, in 30 fathoms, in July 1897.

CYTHEROPTERON SUBCIRCINATUM, *G. O. Sars*.

1868. *Cytheropteron subcircinatum*, G. O. Sars (**71**), p. 81.

A considerable number of specimens of this Ostracod were dredged off East Glacier, Cape Flora, July 21st, 1897; this species does not appear to have previously been observed out of Norway. Prof. Brady agrees with my identification of the species.

CYTHEROPTERON PUNCTATUM, *G. S. Brady*.

1868. *Cytheropteron punctatum*, G. S. Brady (**12**), p. 449, pl. 34. figs. 45–48.

This is a rare species in the Collection; it was obtained off

East Glacier, along with the last, and is also a new record for Arctic seas.

CYTHEROPTERON ANGULATUM, *Brady & Robertson.*

1872. *Cytheropteron angulatum*, Brady & Robertson (**19**), p. 62, pl. 2. figs. 7, 8.

This also was very rare; it was taken off East Glacier along with *C. punctatum* and *C. subcircinatum*. In view of these additions to the Arctic Ostracod fauna (for this also is now for the first time recorded for the arctic seas), it may be of interest to quote a remark made by the authors of the Monograph of the Marine and Freshwater Ostracoda of the North Atlantic and North-Western Europe concerning *C. angulatum*, which is as follows:—"From its abundance in the glacial clays of Scotland it may be expected that this species (*C. angulatum*) will hereafter prove be a recent Arctic form." It has been obtained as a recent species at quite a number of places around the Scottish coasts, as well as in Roundstone Bay, Ireland.

Genus PSEUDOCYTHERE, *G. O. Sars*, 1865.

PSEUDOCYTHERE CAUDATA, *G. O. Sars.*

1865. *Pseudocythere caudata*, G. O. Sars (**71**), p. 88.

Only one or two specimens of this curious species were obtained; it was dredged off East Glacier, where so many other rare things were captured. It is of interest to note that *Pseudocythere caudata* is recorded by Prof. G. S. Brady from the vicinity of Kerguelen Island, situated about 50° South latitude and 70° East longitude.

Genus SCLEROCHILUS, *G. O. Sars*, 1865.

SCLEROCHILUS CONTORTUS (*Norman*).

1862. *Cythere contorta*, Norman (**56**), p. 48, pl. 2. fig. 15.

This was dredged off Cape Flora, September 10th, 1896, and off Cape Gertrude and East Glacier in July 1897. *S. contortus* has already been recorded from the Arctic seas; it is also one of the British species. It was moderately rare in the Franz-Josef Land collection.

Genus PARADOXOSTOMA, *Fischer*, 1855.

PARADOXOSTOMA VARIABILE (*Baird*).

1835. *Cythere variabilis*, Baird (**1**), p. 98, pl. 3. figs. 7 *a–b*.

Several specimens were obtained in some material dredged off

West Point and in West Bay, Cape Flora, in July 1897, at a depth of from 2 to 10 fathoms. This is recorded from Spitzbergen and Greenland, and is also one of the more generally distributed species in Norway, as well as round the British Islands.

PARADOXOSTOMA FLEXUOSUM, *G. S. Brady.*

1866. *Bythocythere ? flexuosa*, G. S. Brady (**11**), p. 211.

A few specimens of *Paradoxostoma flexuosum* were dredged off East Glacier in July 1897. It has been previously recorded from Davis Strait (lat. 69° 31′ N., long. 56° 1′ W.) by A. M. Norman, and is widely distributed southward to the Bay of Biscay.

MYODOCOPA.

Genus PHILOMEDES, *Lilljeborg*, 1853.

PHILOMEDES BRENDA (*Baird*).

1850. *Cypridina brenda*, Baird (**3**), p. 181, pl. 23. figs. 1 *a–g*.

A number of specimens of this Ostracod were dredged in 15 fathoms, one mile off Flora Cottage, on September 10th, 1896, and off West Glacier, Günther Sound, in 10 fathoms, on September 9th, 1897. Dr. Norman records *Philomedes brenda* from Holsteinbourg Harbour, Greenland ; it has also been observed in different Norwegian localities as well as in Sweden. In Britain the only places where it has been obtained are off Noss, in Shetland, the Dogger Bank off the coast of Durham, and in the Clyde in the deep water to the east of Arran.

CLADOCOPA.

Genus POLYCOPE, *G. O. Sars*, 1865.

POLYCOPE ORBICULARIS, *G. O. Sars.*

1865. *Polycope orbicularis*, G. O. Sars (**71**), p. 122.

This species was dredged off Flora Cottage in September 1896, and off East Glacier and Cape Gertrude in July 1897. *Polycope orbicularis*, though recorded from various parts of the British and Norwegian coasts, does not appear to have been previously observed so far within the Arctic circle ; its occurrence there is, however, not surprising, seeing that it is moderately common as

a post-tertiary fossil, at least in the shell-bearing "Glacial clays" of Scotland.

COPEPODA.

Copepoda were fairly numerous in Mr. Bruce's collection of Franz-Josef Land Crustacea. They represent a considerable number of species, and two of them are freshwater forms. Several of the species have been long known as denizens of the Arctic seas; but, on the other hand, this is the first time that a large proportion of them have been recorded from such high latitudes. Nearly all the Franz-Josef Land Copepoda belong to described species, only a very few being new to science. Another interesting point in regard to these Arctic Copepods is, that while the majority of the pelagic forms—that is such as are usually captured by tow-net—are of large size and belong to few species, the majority of those taken with the dredge are small and the species numerous. It may be remarked further that in recording the species of Copepoda obtained in the Franz-Josef Land collection, those belonging to the Calanidæ are placed first, then follow the Centropagidæ, the Mesophriadæ, the Cyclopidæ, the Harpacticidæ, and the Oncæadæ. The families Centropagidæ, Mesophriadæ, and Oncæadæ are each represented by a single species, the Calanidæ and the Cyclopidæ by four species each, and the Harpacticidæ by 36 species, or 47 in all.

Family Calanidæ.

Genus Calanus, *Leach*, 1819.

Calanus finmarchicus (*Gunner*).

1765. *Monoculus finmarchicus*, Gunner (**35**), p. 175, figs. 20–23.

This species was fairly well represented in the Franz-Josef Land collection; it occurred chiefly in tow-net collections from the vicinity of Cape Flora, Northbrook Island, as, for example, at West Bay; off east end of Cape Gertrude; two-thirds of a mile south-west of Elmwood; off West Glacier, and also near East Glacier.

Calanus hyperboreus, *Kröyer*.

1838. *Calanus hyperboreus*, Kröyer (**41**), p. 82, pl. 4. figs. 23 *a–d*.

This is quite distinct from *Calanus finmarchicus*, both in the junior and adult forms. *Calanus hyperboreus* was of rather more

frequent occurrence than *C. finmarchicus*, and appeared to be more generally distributed; but most of the specimens were collected in the neighbourhood of Cape Flora. Some of the adult females of this species were comparatively of large size; one that was measured was fully 8 millimetres (nearly one-third of an inch) in length from the forehead to the end of the caudal furca.

Genus Pseudocalanus, *Boeck*, 1872.

Pseudocalanus elongatus (*Boeck*).

1864. *Clausia elongata*, Boeck (5), p. 10.

This species was observed in several tow-net gatherings and was moderately frequent in a few of them. Both male and female specimens were observed. They occurred chiefly in gatherings from the neighbourhood of Cape Flora.

Genus Euchæta, *Philippi*, 1843.

Euchæta norvegica, *Boeck*.

1872. *Euchæta norvegica*, Boeck (7), p. 40.

A single, scarcely mature specimen of this *Euchæta* was captured with the tow-net about one and a half miles south-west of Elmwood on June 9th, 1897.

Family Centropagidæ.

Genus Metridia, *Boeck*, 1865.

Metridia longa (*Lubbock*). (Pl. 4. figs. 16, 17.)

1854. *Calanus longus*, Lubbock (51), p. 127, pl. 5. fig. 10.

This species was rather common in tow-gatherings collected in the neighbourhood of Cape Flora, as, for example, off Elmwood, near East Glacier, &c. A considerable proportion of the specimens were immature. It is difficult to distinguish immature specimens of *Metridia longa* from those of *Metridia hibernica*; the adults of *M. longa* may be recognized by their larger size; but satisfactory identification can only be arrived at by the careful examination of structural details in mature specimens. *Metridia longa* has been recorded from the Faröe Channel. Some time ago I had the privilege of examining a series of tow-net gatherings collected between the Shetland Islands and Faröe, but the only *Metridia* obtained in these gatherings was *M. hibernica* (Brady & Robertson). [*Metridia longa* (Lubbock, 1854) is identified as *Metridia armata*, Boeck (1865), but not *Metridia armata*,

Brady (1878): the latter is recognized as a distinct species by Giesbrecht under the name of *Metridia hibernica* (Brady & Robertson, 1873).]

Family Misophriadæ.

Genus Misophria, *Boeck*, 1864.

Misophria pallida, *Boeck*.

1864. *Misophria pallida*, Boeck (5), p. 24.

One or two specimens of this species were obtained in a gathering of micro-crustacea dredged at West Bay, Cape Flora, in 2 to 10 fathoms on July 2nd, 1897. *Misophria pallida* has been recorded from Norway, and it appears to be generally distributed around the British coast, but to be nowhere very common. In Scotland it has been obtained in the Firth of Forth, in Moray Firth, and in the Firth of Clyde.

Family Cyclopidæ.

Genus Oithona, *Baird*, 1843.

Oithona similis, *Claus*. (Pl. 4. figs. 18, 19.)

1866. *Oithona similis*, Claus (24).

This species was obtained in tow-net gatherings collected two-thirds of a mile south-west of Elmwood on May 22nd, 1897, but was comparatively scarce; and it was taken with the tow-net in the same neighbourhood during the following month. This is certainly the *Oithona similis*, Claus, as described and figured by Dr. Giesbrecht in 'Pelagischen Copepoden des Golfes von Neapel.' The same author refers doubtfully to this species the *Oithona helgolandica*, Claus (1863), and the *Oithona spinifrons*, Boeck (1864); and with respect to *Oithona spinifrons*, Boeck, Prof. Brady, in his 'Monograph of the British Copepoda,' vol. i. published 20 years ago, states that he is "not at all satisfied that this is not synonymous with *O. helgolandica*, Claus." As there appears to be a consensus of opinion that all three species are synonymous, it would be better if the earlier name—*O. helgolandica*—of Claus were adopted. *Oithona spinirostris*, Claus (1863), is regarded by Dr. Giesbrecht as synonymous with *O. plumifera*, Baird (1843).

Genus Cyclopina, *Claus*, 1863.

Cyclopina gracilis, *Claus*.

1863. *Cyclopina gracilis*, Claus (23), p. 104, pl. 10. figs. 9–15.

A few specimens of this small but distinct species were obtained in some material dredged off East Glacier, Cape Flora, on July 21st, 1897. *Cyclopina gracilis* has a wide distribution in the British seas, but is not very common.

Genus Thorellia, *Boeck*, 1864.

Thorellia brunnea, *Boeck*.

1864. *Thorellia brunnea*, Boeck (5), p. 26.

Thorellia brunnea was more or less frequent in several gatherings of micro-crustacea collected by means of the dredge, as, for example, in gatherings from West Bay, off East Glacier, and south-west of Elmwood—this last was an inshore gathering in quite shallow water.

Genus Cyclops, *O. F. Müller*, 1776.

Cyclops Brucei, sp. n. (Pl. 6. figs. 1–6.)

This appears to be a new species, of which the following is a description:—Length of adult female 1·1 mm. (about $\frac{1}{23}$ of an inch). Antennules (fig. 2) moderately short and stout, 12-jointed and sparingly setiferous; the third and fifth joints are the shortest, the eighth, ninth, and last are rather longer than any of the others except the first. Both branches of the swimming-feet are short and stout and 3-jointed: in the first pair (fig. 3) the inner branches are armed with a strong terminal claw-like spine; the fourth pair (fig. 4) are less powerfully armed; the fifth pair (fig. 5) are small, the secondary joint is cylindrical in form, and the length rather more than twice the breadth, the truncate end bears interiorly a moderately short spine, and exteriorly a long seta that is at least four times the length of the joint from which it springs; the seta that springs from the exterior produced part of the basal joint is also elongate. The caudal furca (fig. 6) are nearly three times as long as the last abdominal segment; the small spiniform seta usually observed on the outer margins of the furca in *Cyclops* is situated at about a third of their length from the distal end; there is also a minute notch near their base.

The species is named in compliment to Mr. Bruce, the Naturalist of the Jackson-Harmsworth Expedition.

In some respects *Cyclops Brucei* resembles *Cyclops bisetosus*, Rehberg, but in that species the antennules are 17-jointed; the armature of the swimming-feet also differs somewhat, and especially as regards the first pair.

Hab. Pond near Elmwood, Cape Flora; not uncommon.

Family Harpacticidæ.

Genus Bradya, *Boeck*, 1872.

Bradya typica, *Boeck*.

1872. *Bradya typica*, Boeck (7), p. 42.

This species was somewhat rare in the Franz-Josef Land collections; it was only observed in a gathering made off East Glacier, Cape Flora, in about 30 fathoms, on July 21st, 1897. Though *Bradya typica* appears to be widely distributed, it is not a common species anywhere.

Bradya minor, *T. & A. Scott*.

1896. *Bradya minor*, T. & A. Scott (84), p. 425, pl. 35. figs. 5, 9, 13, 21, 24, 31, 35, 42; pl. 36. figs. 5 & 9.

This was one of several species described in the 'Transactions of the Linnean Society of London,' vol. vi., 2nd ser., p. 425; it is distinguished from its near allies by its small size, brownish colour, and an "eye-like dusky pigment-spot at the base of the antennules." *Bradya minor* occurred along with *B. typica* in the gathering collected off East Glacier, Cape Flora, on July 21st, 1897. Its distribution in the British Islands includes the Firths of Forth and Clyde and Liverpool Bay.

Genus Ectinosoma, *Boeck*, 1864.

Ectinosoma Sarsi, *Boeck*.

1872. *Ectinosoma Sarsi*, Boeck (7), p. 45.

This species was dredged off East Glacier in company with the two species of *Bradya* already referred to, and also at West Bay, Cape Flora, in from 2 to 10 fathoms on July 2nd, 1897. This is one of the larger and more common species of *Ectinosoma* in the British Copepod fauna.

Ectinosoma propinquum, *T. & A. Scott.*

1896. *Ectinosoma propinquum*, T. & A. Scott (84), p. 428, pl. 36. figs. 19, 27, 46, *et seq.*

Two specimens of an *Ectinosoma* differing little from the characters of *E. propinquum* were obtained in a gathering from West Point, Cape Flora, at a depth of 2 to 4 fathoms, collected on 5th July, 1897. This species is one of the larger of the *Ectinosomata*, being not much less in size than *Ectinosoma Sarsi*; it possesses a distinctly hooked labium, the fifth pair of thoracic feet are of moderate size and resemble somewhat those of *E. Sarsi*.

Ectinosoma curticorne, *Boeck.*

1864. *Ectinosoma curticorne*, Boeck (5).

Dredged off East Glacier, Cape Flora, July 21st, 1897; rare. Like *Bradya minor*, this *Ectinosoma* is of a brownish colour. It has been observed in the stomachs of young flat-fish (*Pleuronectes limanda*) caught in Liverpool Bay.

Ectinosoma pygmæum, *T. & A. Scott.*

1896. *Ectinosoma pygmæum*, T. & A. Scott (84), p. 433, pl. 36. figs. 15, 41; pl. 37. figs. 5, 20, 39, 43; pl. 38. figs. 4, 26, 31, 55.

This was also dredged off East Glacier, Cape Flora, in 30 fathoms, July 21st, 1898. *E. pygmæum* is very small: it is even shorter, but somewhat stouter than *E. atlanticum*. Distribution: Firth of Forth, Scotland; vicinity of Port Erin, Isle of Man.

Ectinosoma melaniceps, *Boeck.*

1864. *Ectinosoma melaniceps*, Boeck (5), p. 30.

The colour of the head in this species is, as the name implies, distinctly different from the rest of the body, so that the species may be distinguished by this character alone. *E. melaniceps* occurred rather more frequently than others of the same genus. It was dredged at about 50 yards off West Point, Cape Flora, in 2 to 3 fathoms, June 18th, 1897; at West Bay, in 2 to 10 fathoms, July 2nd, 1897; and off East Glacier, in 30 fathoms, July 21st, 1897. It is also of frequent occurrence around the shores of the British Islands.

Ectinosoma Normani, *T. & A. Scott.*

1896. *Ectinosoma Normani*, T. & A. Scott (84), p. 435, pl. 36. figs. 21, 29, &c.

This was dredged off East Glacier, Cape Flora, July 21st,

1897. *E. normani* was one of the rarer species in the Franz-Josef Land collections. Its distribution includes the Firths of Forth and Clyde, Scotland; and Barrow Channel, near Barrow-in-Furness, England.

Ectinosoma atlanticum (*Brady & Robertson*).

1873. *Microsetella atlantica*, Brady & Robertson (20), p. 130, pl. 9. figs. 11–16.

The small size and slender form of this species make it easily overlooked. It was very scarce in the Franz-Josef Land collections, having only been observed in a gathering off East Glacier made in July 1897. This species has a wide distribution, and is not unfrequent in the British seas.

Genus Zosime, *Boeck*, 1872.

Zosime typica, *Boeck*.

1872. *Zosime typica*, Boeck (7), p. 14.

This was obtained at Cape Gertrude and also off East Glacier, Cape Flora, but was apparently not very common. It is also a British species.

Genus Robertsonia, *Brady*, 1880.

Robertsonia tenuis (*Brady & Robertson*).

1873. *Ectinosoma tenue*, Brady & Robertson (22), p. 196.

This species was dredged at West Bay, Cape Flora, in from 2 to 10 fathoms, July 2nd, 1897. *Robertsonia* somewhat resembles *Ectinosoma*, and was at first ascribed to that genus. It has been obtained at various places around the British coasts.

Genus Amymone, *Claus*, 1863.

Amymone sphærica, *Claus*.

1863. *Amymone sphærica*, Claus (23), p. 114, pl. 20. figs. 1–9.

The Copepod so named is one of a very curious group of crustaceans, and quite unlike the usual Copepod forms. It appeared to be very rare in the Franz-Josef Land collections. The only gathering in which this species was obtained was dredged off Flagstaff Point, Elmwood, by D. W. Wilton, 20th September, 1896. This is also a British species.

Genus Stenhelia, *Boeck*, 1864.

Stenhelia reflexa, *T. Scott.*

1895. *Stenhelia reflexa*, T. Scott (80), p. 166, pl. 3. figs. 1–9.

This was dredged off East Glacier, Cape Flora, on July 21st, 1897. *Stenhelia reflexa* is described and figured in Part iii. of the 13th Annual Report of the Fishery Board for Scotland (1895), from specimens obtained in the Firth of Forth.

Genus Ameira, *Boeck*, 1864.

Ameira longipes, *Boeck.*

1864. *Ameira longipes*, Boeck (5), p. 49.

This was obtained in a gathering dredged at West Bay, Cape Flora, on July 5th, 1897; it was also obtained off East Glacier on the 21st of the same month, but it appeared to be somewhat rare in these gatherings. It is not a very rare species in the British seas.

Ameira exigua, *T. Scott.*

1894. *Ameira exigua*, T. Scott (79), p. 243, pl. 6. figs. 15–23.

This is a much smaller species than the last, and it was also of rare occurrence. It was obtained sparingly in the gathering dredged off East Glacier on July 21st, 1897. This species is described and figured in Part iii. of the 12th Annual Report of the Fishery Board for Scotland (1894).

Ameira longiremis, *T. Scott.*

1894. *Ameira longiremis*, T. Scott (79), p. 241, pl. 5. figs. 29–32, pl. 6. figs. 1–5.

This *Ameira* was also dredged off East Glacier; this was the only gathering in which it was observed. The species is described and figured in Part iii. of the same Fishery Board's Report in which *Ameira exigua* and *Ameira reflexa* are described.

Ameira reflexa, *T. Scott.*

1894. *Ameira reflexa*, T. Scott (79), p. 240, pl. 5. figs. 20–28.

Ameira reflexa was obtained in the same gathering with the last species, and appeared to be rare.

Genus Jonesiella, *Brady*, 1890.

Jonesiella spinulosa (*Brady & Robertson*).

1875. *Zosima spinulosa*, Brady & Robertson (22), p. 196.

This *Jonesiella* was rather more frequent than some of the

other species; it was dredged off East Glacier, off Cape Gertrude in 30 fathoms, and in 8 fathoms off Cape Flora, in July 1897. This is not an uncommon species in the British seas.

Genus Delavalia, *Brady*, 1868.

Delavalia robusta, *Brady & Robertson.*

1875. *Delavalia robusta*, Brady & Robertson (22), p. 196.

This species was dredged off East Glacier in 30 fathoms and in 2 to 4 fathoms off West Point, Cape Flora, in July 1897. Several specimens were obtained.

Delavalia mimica, *T. Scott.*

1897. *Delavalia mimica*, T. Scott (82), p. 150, pl. 1. figs. 1–9.

A number of specimens of this distinct species were obtained in gatherings dredged off West Point, July 5th, and off East Glacier, July 21st, 1897. The species is described and figured Part iii. of the 15th Annual Report of the Fishery Board for Scotland (1897), from specimens obtained in the Firth of Clyde; it has also been observed in the Firth of Forth.

Delavalia reflexa, *Brady & Robertson.*

1875. *Delavalia reflexa*, Brady & Robertson (22), p. 196.

A few specimens of *Delavalia reflexa* were obtained in a gathering collected off East Glacier. In this species the inner branches of the first pair of swimming-feet want the stout spiniform terminal seta that distinguishes *D. robusta*; in *D. reflexa* the terminal setæ are slender.

Delavalia arctica, sp. n. (Pl. 5. fig. 14; Pl. 6. figs. 7–11.)

The female specimen represented by the figure (fig. 7, Pl. 6) measured fully 1 mm. ($\frac{1}{22}$ of an inch) in length from the end of the rostrum to the extremity of the caudal furca. The species somewhat resembles *Delavalia palustris*, Brady, in general outline. The antennules (anterior antennæ) are 8-jointed (fig. 8, Pl. 6); the proportional lengths of the joints are indicated approximately by the formula:

Proportional lengths of the joints	20	12	11	8	7	8	6	8
Numbers of the joints	1	2	3	4	5	6	7	8

The mouth-organs are somewhat similar to those of *Delavalia giesbrechti*, T. Scott, except that the second foot-jaws are comparatively robust; the first joint bears one slender and two stout spiniform setæ at the extremity of the inner margin; the terminal

claws are feeble (Pl. 5. fig. 14). The first pair of swimming-feet resemble those of *Delavalia palustris*, but both branches are more elongate and the lengths of the joints are proportionally slightly different; they differ also in their armature, as shown by the figure (fig. 9, Pl. 6). The other swimming-feet are also moderately elongate and slender; the joints of the inner branches, as shown by the figure of the fourth pair (fig. 10, Pl. 6), have their inner distal angles more or less produced downwards into spine-like processes as in *Delavalia robusta*, Brady & Robertson. The fifth pair also somewhat resemble those of that species, but the secondary joint is proportionally broader and of a somewhat different form; and there is a peculiarity in the hinge arrangement of the joint by which it can be extended at nearly right angles to the body (fig. 11, Pl. 6). The caudal furca are about as long as the combined lengths of the last two abdominal segments.

Hab. Cape Gertrude (Cape Flora), Northbrook Island; rather rare.

Remarks. This species partakes of the characters of *Delavalia palustris* on the one hand and of *Delavalia robusta* on the other; but it differs from the first by the form of the fifth pair of thoracic feet and from the second in the structure of the first pair. A difference may also be observed in the proportional lengths of the joints of the antennules, as well as in the more robust form of the posterior foot-jaws.

Genus Maraenobiotus, *Mrazek*, 1893.

Maraenobiotus Vejdovskyi, *Mrazek*. (Pl. 6. figs. 12–17.)

1893. *Maraenobiotus Vejdovskyi*, Mrazek (54), p. 103, pl. 4. figs. 17–32, pl. 5. figs. 33–37.

This is a freshwater species; it was first discovered by Mrazek in Bohemia, and it has also occurred in one or two places in Scotland. It is a slender Copepod, and in this respect resembles certain species of *Moraria*—a genus with which it is closely related. One of the principal characters that distinguishes *Maraenobiotus* from *Moraria* is the very rudimentary form of the mandible-palp (fig. 14); whereas in *Moraria* the mandible-palp, though small, is normal in structure. The Franz-Josef Land specimens resemble those found in Scotland in almost every detail of structure: the chief difference observed is in the form of the secondary joints of the fifth thoracic feet; in the Franz-

Josef Land specimens this joint is subquadrangular, with straight margins, as shown in fig. 17. The species is very small—the average length of the specimens is about ·56 mm. to ·6 mm. ($\frac{1}{45}$ to $\frac{1}{42}$ of an inch). The species was moderately frequent in freshwater pools near Elmwood, Cape Flora. A few of the females carried ova, but a considerable proportion of the specimens were more or less immature.

After the above remarks on *Maraenobiotus* had been prepared, I received from the author, Dr. Jules Richard, an interesting contribution to the literature of the Arctic freshwater fauna, being a report on the Entomostraca obtained in the freshwaters explored during the recent voyage to the Arctic seas of the steam yacht 'Princesse Alice.' The places visited comprised Lofoten, Spitzbergen, Iles Beeren, Hope, de Barents, and Faröe. In this memoir Dr. Richard describes under the name of *Mesochra Brucei* an harpactid which appears to resemble the Franz-Josef Land form referred to above; it may not, however, be the same species.

With regard to the specimens from Franz-Josef Land, the rudimentary form of the mandible-palp, together with the structure of the first and fifth pairs of thoracic feet, identify them with Mrazek's *Maraenobiotus*; there may be slight differences in the armature of the swimming-feet, but such differences are unimportant in view of the close similarity otherwise.

Genus Canthocamptus, *Westwood*, 1836.

(?) Canthocamptus parvus, *T. & A. Scott*. (Pl. 6. figs. 18–24.)

1896. (?) *Canthocamptus parvus, T. & A. Scott* (85), p. 6, pl. 2. figs. 14–22.

This species, which is represented in the Franz-Josef Land collection by several specimens, was dredged off East Glacier, Cape Flora, in 30 fathoms, July 21st, 1897. (?) *Canthocamptus parvus* is a small species that was first described from specimens obtained in the Firth of Forth near Aberlady. The Franz-Josef Land specimens are somewhat larger than those from the Firth of Forth; there are also one or two other differences, but they are comparatively unimportant. The following is a brief description of the Arctic specimens:—

The antennules in the female are short and six-jointed (fig. 19). The antennæ have the secondary branches small and two-jointed (fig. 20). The mandible-palp is moderately well developed and

bears a one-jointed branch which is subapical (fig. 21). A moderately long plumose seta springs from the basal joint of the palp a short distance below the one-jointed branch. The posterior foot-jaws are moderately stout, and are each furnished with an elongate and slender terminal claw. The first pair of swimming-feet somewhat resemble those of *Dactylopus longirostris*, Claus, but are rather more slender (fig. 22); a small seta springs from about the middle of the inner margin of the first joint of the inner branches, while the outer margin is fringed with minute hairs; the inner branches are also armed with a moderately stout terminal spine and an elongate slender seta; the outer branches, which are rather more than half the length of the inner, are composed of three subequal joints. The inner branches of the second, third, and fourth pairs are two-jointed; in the fourth pair (fig. 23) the two-jointed inner branches are short, but the outer, which are three-jointed, are elongate. The fifth pair (fig. 24) are somewhat similar to those of *Dactylopus minutus*, Claus. The caudal furca are very short.

Remarks. This species resembles very closely one of the smaller species of *Dactylopus* both in its general outline and in its six-jointed antennules; but it is precluded from that genus by the structure of the mandible-palp and by the inner branches of the second, third, and fourth pairs of swimming-feet being only two-jointed, and in these respects it agrees more closely with *Canthocamptus* than with any other described genus. In the original description of the species, reference is made to one or two points in which the species does not agree with *Canthocamptus*, and which may by-and-by render its removal from that genus necessary. I am inclined, however, for the present to leave it as described. The length of the specimen figured (fig. 18) is ·48 mm. ($\frac{1}{52}$ of an inch). The Firth of Forth is the only British habitat of the species known to me.

Genus Laophonte, *Philippi*, 1840.

Laophonte horrida, *Norman*.

1876. *Laophonte horrida*, Norman (60), p. 206.

This well-marked form was dredged off East Glacier in 30 fathoms, and also off West Point in 2 to 3 fathoms; both localities being in the vicinity of Cape Flora, Northbrook Island. It was dredged at West Point on June 4th and on July 2nd and

21st, 1897. *Laophonte horrida* is recorded from the Arctic seas by Buchholz, in his Report on the German North-Polar Expedition of 1869–70, but he, under some misapprehension, referred this Copepod to Müller's *Cyclops minuticornis*. The species appears to be generally distributed round the British coasts.

Laophonte curticauda, *Boeck*.

1864. *Laophonte curticauda*, Boeck (5), p. 55.

This species was somewhat rare in the Franz-Josef Land collection; a few specimens were obtained in some material dredged off Cape Gertrude. *L. curticauda* is also a British species.

Laophonte depressa, *T. Scott*.

1894. *Laophonte depressa*, T. Scott (79), p. 245, pl. 6. figs. 24–31, pl. 7. figs. 1–3.

This species was described and figured in Part iii. of the Twelfth Annual Report of the Fishery Board for Scotland (1894), from specimens found in the Firth of Forth. The Franz-Josef Land gathering in which it occurred was dredged off East Glacier, Cape Flora, July 21st, 1897.

Laophonte longicaudata, *Boeck*.

1864. *Laophonte longicaudata*, Boeck (5), p. 55.

This also was dredged off East Glacier, Cape Flora, and appeared to be somewhat rare. It has been long known as a British species. The outer branches of the first pair of swimming-feet in all the Franz-Josef Land specimens appear to be two-jointed, the first joint being short and the other about twice as long as the first.

Laophonte intermedia, *T. Scott*.

1895. *Laophonte intermedia*, T. Scott (80), p. 168, pl. 3. figs. 10–20.

This distinct species was obtained in West Bay on July 27th, 1897, it occurred in a tow-net gathering. *L. intermedia* was described and figured in Part iii. of the Thirteenth Annual Report of the Fishery Board for Scotland (1895), from specimens found in the Firth of Forth.

Laophonte similis, *Claus*.

1866. *Laophonte similis*, Claus (24), p. 23, pl. 5. figs. 13, 14.

One or two specimens of a Copepod which I have ascribed to *Laophonte similis* occurred in some dredged material from West Bay, Cape Flora, collected in July 1897.

LAOPHONTE PERPLEXA, sp. n. (Pl. 7. figs. 1–7.)

Several specimens of a *Laophonte* that appear to be undescribed were obtained in a gathering of small Crustacea collected off East Glacier, Cape Flora, in 30 fathoms, on July 21st, 1897. Its characters are somewhat intermediate between those of *Laophonte curticauda* and *Laophonte similis*. It is rather smaller than either of these species, being only about ·63 mm. ($\frac{1}{40}$ of an inch) in length. The body is in general appearance like that of *L. curticauda*. The rostrum is short, and the antennules are seven-jointed; the fourth and fifth joints of the antennules are shorter than the others, as shown by the formula, which indicates approximately the proportional lengths of all the joints :—

Proportional lengths of the joints	14	20	16	5	3	7	11
Numbers of the joints.....	1	2	3	4	5	6	7

The posterior foot-jaws (fig. 3) resemble very closely those of *L. similis* except that the terminal claw is somewhat stronger. The first pair of swimming-feet (fig. 4) are intermediate in structure between those of *L. similis* and *L. thoracica*; the outer branches are short and two-jointed, the last joint being about twice the length of the first, the terminal claws of the inner branches are moderately stout. The fourth pair (fig. 5) have the outer branches elongate and slender, and the inner branches short and composed of two subequal joints. The fifth pair (fig. 6) are nearly like those of *L. curticauda*, but the secondary joints are proportionally rather smaller, and the armature of both joints is somewhat different. The caudal furca (fig. 7) resemble those of *L. similis*, being rather longer than the last abdominal segment.

Remarks. The *Laophonte* referred to above is one of those perplexing forms, met with now and again, which are somewhat difficult to dispose of satisfactorily. Its characters are such that it might be considered a variety of *Laophonte curticauda* as well as of *L. similis*; in these circumstances it appeared to me to be better to give the form a distinct name.

Genus LAOPHONTODES, *T. Scott*, 1894.

LAOPHONTODES TYPICUS, *T. Scott.*

1894. *Laophontodes typicus*, T. Scott (79), p. 249, pl. 8. figs. 2–8.

This genus and species were described and figured in 1894 in

Part iii. of the Twelfth Annual Report of the Fishery Board for Scotland, from specimens obtained in the Firth of Forth. Its occurrence at Franz-Josef Land shows that it is widely distributed. It was obtained off East Glacier, Cape Flora, on July 21st, 1897. This is a very small Copepod, being only about ·4 mm. ($\frac{1}{60}$ of an inch) in length.

Genus Cletodes, *Brady*, 1872.

Cletodes similis, *T. Scott.*

1895. *Cletodes similis*, T. Scott (80), p. 168, pl. 3. figs. 22–26, pl. 4. figs. 1–3.

This Copepod was dredged off Cape Gertrude in 30 fathoms; it was also obtained off East Glacier. The species was described in 1895, in Part iii. of the Thirteenth Annual Report of the Fishery Board for Scotland, from specimens found in the Firth of Forth.

Cletodes tenuipes, *T. Scott.*

1897. *Cletodes tenuipes*, T. Scott (82), p. 170, pl. 1. figs. 19–27.

C. tenuipes was also dredged off East Glacier, but very few specimens were obtained. It was described and figured from Clyde specimens in Part iii. of the Fifteenth Annual Report of the Fishery Board for Scotland (1897).

Cletodes longicaudata, *Brady & Robertson.*

1872. *Cletodes longicaudata*, Brady & Robertson (19), p. 196.

This was also obtained off East Glacier, and appeared to be moderately rare. This species has long caudal furca.

Genus Enhydrosoma, *Boeck*, 1872.

Enhydrosoma curvatum (*Brady & Robertson*). (Pl. 3. fig. 17.)

1875. *Rhizothrix curvata*, Brady & Robertson (22), p. 197.

A few specimens of what appears to be this species were obtained in some material dredged off East Glacier. There was a slight difference in the armature of the fifth pair of thoracic feet (as shown by fig. 17, Pl. 3), but otherwise the Franz-Josef Land specimens appeared to be identical with the species to which they are ascribed.

Genus Dactylopus, *Claus*, 1863.

Dactylopus tisboides, *Claus.*

1863. *Dactylopus tisboides*, Claus (23), p. 127, pl. 16. figs. 24–28.

This, which is a common British species, was moderately

frequent in one or two of the Franz-Josef Land gatherings, *i. e.* in a gathering dredged about fifty yards off West Point, Cape Flora, in 2 to 3 fathoms, on June 18th, 1897; in another from West Bay, dredged in about 8 fathoms on July 5th, and in a third collected on the 23rd or 24th of the same month. In some of the specimens there is a tendency for both branches of the fifth thoracic feet to have pellucid markings along the edge of the outer margin.

Dactylopus coronatus, *T. Scott.*

1894. *Dactylopus coronatus*, T. Scott (79), p. 255, pl. 9. figs 12–20.

This species was obtained amongst sand near East Glacier, Cape Flora, August 5th, 1896; it appeared to be rare. *D. coronatus* was described and figured in Part iii. of the Twelfth Annual Report of the Fishery Board for Scotland (1894).

Dactylopus tenuiremis, *Brady & Robertson.* (Pl. 3. figs. 1–4.)

1875. *Dactylopus tenuiremis*, Brady & Robertson (22), p. 197.

Several specimens of what seems undoubtedly to be this species were obtained in a gathering of small Crustacea collected off West Point, Cape Flora, in from 2 to 4 fathoms of water, on July 21st, 1897. *D. tenuiremis* is closely related to the next species, but differs from it in the form of the fifth thoracic feet, and in the structure of the first pair, as shown by the figures.

Dactylopus longirostris, *Claus.* (Pl. 3. figs. 5–8.)

1863. *Dactylopus longirostris*, Claus (23), p. 127, pl. 17. figs. 4–6.

This is one of the species described by Dr. Claus in his 'Die freilebenden Copepoden' (pub. 1863), which were obtained in the vicinity of Heligoland. It resembles *D. tenuiremis* in some respects, but the form of the fifth thoracic and especially of the secondary joints is distinctly different; these outer (secondary) joints are in this species broadly oval and leaf-like ("das aussere ovale Blatt"), the proportion of the breadth to the length being nearly as 20 is to 29, whereas in *D. tenuiremis* it is nearly as 15 is to 28; there is also a difference in the general outline as well as in the armature of both the basal and secondary joints of the fifth pair. It may be noted further that, besides the difference in the first swimming-feet already referred to, the structure of the posterior foot-jaws differs slightly in the two species, as indicated by the figures. *D. longirostris* occurred in a gathering from the vicinity of East Glacier, Cape Flora; only a

few specimens were obtained. This species, and probably also *D. tenuiremis*, should be regarded as belonging to the genus *Diosaccus*, as both appear to be furnished with two ovisacs.

Dactylopus Strömii (*Baird*), var. arcticus, var. nov. (Pl. 5. figs. 11–17.)

1850. *Canthocamptu Strömii*, Baird (3), p. 208, pl. 27. fig. 3.

A number of specimens of a Copepod, which can hardly be distinguished from *Dactylopus Strömii* (Baird), were collected about 50 yards off West Point, Cape Flora, during June and July, 1897. The specimens are from comparatively shallow water—2 to 4 fathoms; and differ from British species of *D. Strömii* chiefly in the following points:—(1) The antennules have nine instead of eight joints (fig. 12); this difference, however, appears to be immaterial, as the number of the joints of which the distal half of the antennules is composed seems to be liable to variation. (2) The posterior foot-jaws (fig. 13) are large and powerful, the second joint is elongate and subcylindrical instead of ovate, and they differ somewhat in their armature. (3) In the fifth pair of thoracic feet the outline of the secondary joint (fig. 15) and the arrangement of the setæ with which it is furnished are somewhat dissimilar to the normal form of the species; and (4) the ova-bearing females carried two ovisacs instead of one. The first pair of swimming-feet (fig. 14), as well as the second, third, and fourth pairs, resemble very closely the same appendages in *D. Strömii*. The species has a wide distribution in the North Sea, and seems to extend all round the British Islands.

Genus Thalestris, *Claus*, 1863.

Thalestris helgolandica, *Claus*.

1863. *Thalestris helgolandica*, Claus (23), p. 131, pl. 17. figs. 12–21.

A few specimens of this *Thalestris* were obtained in a gathering from 30 fathoms, collected July 21st, 1897, off East Glacier, Cape Flora. *Thalestris helgolandica* is a well-marked species, and, though apparently not very common, it has evidently a wide distribution. It occurs sparingly at various places around the British Islands.

Thalestris polaris, sp. n. (Pl. 7. figs. 8–16.)

A *Thalestris*, which I have named as above, occurred very sparingly in gatherings collected at the following places:—From sand near East Glacier on August 5th, 1896; off West Point,

Cape Flora, on June 4th, 21st, and July 5th, 1897; and also in July in West Bay, Cape Flora. The following is a description of the species:—

Description of the female.—Body robust, especially the cephalothorax; rostrum very short; entire length from rostrum to caudal furca about ·95 mm. ($\frac{1}{26}$ of an inch). Antennules (fig. 9) short, 9-jointed; the first two joints of moderate length and subequal, the next two shorter and also subequal; the second joint of the flagellum (the fourth from the end) is equal to twice the length of the preceding joint and to the combined lengths of the next two, the end joint is slightly longer than the penultimate one; the formula shows approximately the proportional lengths of all the joints:—

Proportional lengths of the joints	23	25	15	16	5	10	4	4	6
Numbers of joints	1	2	3	4	5	6	7	8	9

The posterior foot-jaws (fig. 10) resemble those of *Thalestris hibernica*, Brady & Robertson, both in their form and armature; the other mouth-organs are somewhat similar to those of *Thalestris mysis*, Claus. First pair of swimming-feet moderately slender (fig. 11); terminal claws of both branches slender, and not much more than half the length of the branches from which they spring. Fourth pair (fig. 12) also slender; the inner branches reach to about the end of the second joint of the outer branches, and both are furnished on the inner margins with long plumose setæ. The fifth pair somewhat resemble those of *Thalestris hibernica*, but the secondary joints are comparatively rather larger and extend as far as the end of the basal joints; the basal joint bears five apical setæ, while the surface of both it and the secondary joint appears to be more covered with extremely fine cilia (fig. 13). The caudal furca (fig. 16) are elongate, the length being equal to fully twice the breadth.

Description of the male.—The male differs little from the female except that the antennules are modified for grasping. The inner branches of the second pair of swimming-feet (fig. 14) are two-jointed, and somewhat similar in their structure and armature to the inner branches of the same pair of feet in the male of *Thalestris hibernica*. The secondary joints of the fifth pair (fig. 15) are elongate-ovate; the inner margin is nearly straight and fringed with minute hairs; the outer margin, which is slightly curved and tapers gradually towards the apex, bears

three moderately short and stout setæ, there is also a stout and moderately long apical seta and a smaller one at the termination of the inner margin; the basal joint is scarcely produced interiorly, and is provided with three spiniform setæ on the broadly rounded apex, the middle seta being considerably longer than the other two and plumose.

Remarks.—This species has a superficial resemblance to *Thalestris hibernica*, Brady & Robertson, and I was at first inclined to regard it as a northern variety of that form. I had recently, however, the opportunity to compare typical Scottish examples of *Thalestris hibernica* with the Franz-Josef Land specimens, and find that they are quite distinct, the difference in the length of the caudal furca being alone sufficient to distinguish the one from the other.

Thalestris forficula, *Claus.*

1863. *Thalestris forficula*, Claus (**23**), p. 131, pl. 17. figs. 7–11.

The Franz-Josef Land Copepod which I now record under this name is similar to a form described and figured in the 'Annals and Magazine of Natural History' for October 1893, by T. and A. Scott, under the name of *Thalestris forficuloides*. I am now inclined to consider that species as a 'form' of Claus's *Th. forficula*. Its occurrence at Franz-Josef Land extends considerably the distribution of the species. It was obtained in a gathering dredged off Cape Gertrude in 30 fathoms, July 21st, 1897. In Scotland it has been obtained both in the Firths of Forth and Clyde.

Thalestris frigida, sp. n. (Pl. 7. figs. 17–23; Pl. 8. figs. 1, 2.)

Description of the female.—Body robust, length 1·63 mm. ($\frac{1}{15}$ of an inch). Rostrum prominent. Antennules short, moderately stout and 9-jointed; the sixth and last joints are each of them about equal to the combined lengths of the seventh and eighth (fig. 18); the proportional lengths of all the joints are shown approximately by the formula:—

Proportional lengths of the joints ...	48	24	24	20	12	16	7	8	16
Numbers of the joints	1	2	3	4	5	6	7	8	9

The mouth-organs are somewhat similar to those of *Thalestris mysis*, Claus, except that there is a slight difference in the

armature of the posterior foot-jaws (fig. 19). The first pair of thoracic feet are moderately slender; the seta on the inner margin of the first joint of the inner branches springs from near the middle of the joint; both branches are furnished with a strong terminal claw of moderate length, and the outer margins of the first and second joints of the outer branches, and of the first joint of the inner branches, are fringed with minute spines. The second, third, and fourth pairs are elongate and slender, and have both branches furnished with long plumose setæ (fig. 21). The fifth pair are large and broadly foliaceous, and somewhat resemble those of *Thalestris mysis*, but the secondary joint is considerably smaller than the basal joint, and the armature of the secondary joint is also distinctly different; moreover, both joints, besides being different in general outline, have their surface ornamented with what appears to be numerous minute papillæ (fig. 22). The caudal furca are short (Pl. 8. fig. 2) and about equal to the length of the last abdominal segment, and they are about as broad as long.

Description of the male.—The male is very similar to the female except that the antennules have a modified and hinged structure, to permit of their use as grasping-organs. The inner branches of the second pair of thoracic feet are also modified as shown (Pl. 7. fig. 23). The fifth pair (Pl. 8. fig. 1) are much smaller than in the female; the inner portion of the basal joint, which is only slightly produced, is broadly rounded, and provided with three stout setæ of unequal length—the middle one being the longest; the secondary joint is broadly ovate, the inner margin is furnished with only a few minute hairs, but several stout plumose setæ spring from the outer margin and apex.

Hab. Off East Glacier, Cape Flora, July 1897; only a few specimens were obtained in the Collection.

Remarks. The large size and robust form of this Copepod, together with the large and broadly foliaceous fifth pair of feet of the female, differentiated the species at once from all the others in the Collection.

Thalestris Jacksoni, sp. n. (Pl. 8. figs. 3–9.)

Description of the female.—Body moderately stout. Length of the specimen figured 2·5 mm. ($\frac{1}{10}$ of an inch). Rostrum very short. Antennules short, 9-jointed, the sixth joint is considerably longer than any of the other five end-joints (fig. 4); the

approximate proportional lengths of all the joints are shown by the formula:—

Proportional lengths of the joints ...	17	21	15	13	6	10	5	4	6.
Numbers of the joints	1	2	3	4	5	6	7	8	9

The posterior foot-jaws (fig. 5) are stout; the hand somewhat resembles that of *Thalestris rufoviolascens*, but the inner margin is more oblique and the marginal spinules are larger; the other mouth-organs are somewhat similar to those of *Thalestris mysis*. The first pair of thoracic feet are moderately stout, and both branches are armed with strong terminal claws (fig. 6). In the fourth pair the inner branches only reach to about the end of the second joint of the outer branches; both branches bear long plumose setæ (fig. 7). The fifth pair are large and foliaceous: the length of the basal joint is scarcely equal to twice the breadth; this joint bears five setæ on the broadly rounded apex, two of the intermediate (fig. 8) are considerably longer than the others: the secondary joint is oval in outline, its greatest breadth is equal to about half the length, and both the inner and outer margins are fringed with minute cilia; this joint is furnished with six setæ, three on the lower half of the outer margin and three at the apex,—the two outer apical setæ are close together and more slender than the others, which are moderately wide apart as shown in the figure. The caudal furca (fig. 9) are elongate, being fully twice the length of the last abdominal segment, and the two principal setæ are as long as the whole length of the abdomen and furca combined. No males of this species were observed.

Hab. Half mile off Cape Gertrude in 8 fathoms, June 6th, 1897; about fifty yards off West Point, Cape Flora, in 2–3 fathoms, June 20th; and off West Glacier, in 1–3 fathoms, July 6th, 1897.

The species was of rare occurrence in these gatherings.

Remarks. The large size of *Thalestris Jacksoni*, the peculiar form of the posterior foot-jaws, and the form and armature of the large foliaceous fifth pair of thoracic feet, combine to distinguish this from any other *Thalestris* known to me. This fine species is named in compliment to Mr. Jackson, of the Jackson-Harmsworth Arctic Expedition.

Genus Westwoodia, *Dana*, 1855.

Westwoodia nobilis (*Baird*).

1845. *Arpacticus nobilis*, Baird (2), p. 155.

This species was obtained in a gathering collected in West Bay, Cape Flora, July 27th, 1897; a single specimen only was observed. *Westwoodia nobilis* is found sparingly in many places around the British Islands, and appears to be otherwise widely distributed. It is a distinct species, and when living very prettily coloured.

Genus Harpacticus, *Milne-Edwards*, 1838.

Harpacticus chelifer (*Müller*). (Pl. 8. figs. 10–13.)

1776. *Cyclops chelifer*, O. F. Müller (55), p. 2413.

This *Harpacticus*, which is moderately common in the British seas, was of rare occurrence in the Franz-Josef Land collection; the only gathering in which the species was observed was one from West Bay, Cape Flora, collected in July 1897.

It will be observed from the figures on Plate 8, that the Franz-Josef Land specimens of *Harpacticus chelifer* differ somewhat from those from Heligoland and the British seas; the antennules of these Arctic specimens (fig. 10) are 9-jointed, whereas in Dr. Claus's description of the species they are stated to be 8-jointed (achtgliedrig), and this agrees with what I have observed in Clyde specimens. The posterior foot-jaws (fig. 11) are scarcely so angular on the inner aspect as they are found to be in Clyde specimens. There does not appear to be much difference in the structure of the first pair of swimming-feet (fig. 12). In the fifth pair the secondary joints are proportionally smaller than in Clyde specimens, and the inner produced part of the basal joints is more broadly rounded. Notwithstanding these differences, it seems better to regard this simply as a form of *Harpacticus chelifer*.

Harpacticus chelifer, var. arcticus. (Pl. 8. figs. 14–17.)

An *Harpacticus*, of a more robust form than the last, was of frequent occurrence in some of the gatherings. I was inclined at first to regard this as belonging to *Harpacticus gracilis*, Claus, which it in some respects resembles, but I now prefer to look on it as a robust variety of *Harpacticus chelifer*. The

antennules are 9-jointed; the first four joints are proportionally rather shorter than those of *H. gracilis*. The posterior foot-jaws are larger than those of the form last described, but otherwise they resemble them very closely. The first pair of swimming-feet are also larger than those of the form referred to, and there is a slight difference in their structure: the inner branches have the two short end-joints distinct, but the short end-joint of the outer branches appears to be coalescent with the second, so that the outer branches are thus apparently only 2-jointed. The fifth pair (fig. 17) have the secondary joints broadly ovate, and somewhat resemble those of *Harpacticus gracilis*.

This robust variety occurred chiefly in gatherings of Crustacea collected in 2–4 fathoms, about fifty yards off West Point, Cape Flora, during June and July, 1897.

Genus Zaus, *Goodsir*, 1845.

Zaus spinatus, *Goodsir*.

1845. *Zaus spinatus*, Goodsir (**33** *a*), p. 326, pl. 11. figs. 1–8.

This comparatively well-marked species was dredged at West Bay, Cape Flora, in 2–10 fathoms, July 2nd, 1897; only a few specimens were observed. Its British distribution extends from the Scilly Islands to Shetland.

Genus Eupelte, *Claus*, 1863.

Eupelte purpurocincta (*Norman*).

1868. *Alteutha purpurocincta*, Norman (**59**), p. 298.

This species occurred in the same gathering with *Zaus spinatus* from West Bay, Cape Flora. It has sometimes been described as an *Alteutha*, but Prof. Claus and others consider it to be generically distinct. As a British species, it is to be found all round our shores, but seldom in large numbers. *Eupelte purpurocincta* appeared to be rare in the Franz-Josef Land gatherings.

Genus Idya, *Philippi*, 1843.

Idya furcata (*Baird*).

1837. *Cyclops furcatus*, Baird (**1** *a*), p. 330, pl. 9. figs. 26–28.

A considerable number of specimens of *Idya furcata* were

obtained in the Franz-Josef Land collections; they could usually be distinguished at sight by the characteristic pale purple bands across the dorsal aspect. They occurred in three gatherings collected off West Point, Cape Flora, about 50 yards, in 2–4 fathoms: (1) on June 4th, (2) June 22nd, and (3) July 5th, 1897. Some specimens were also obtained in a gathering dredged at West Bay, in 2–10 fathoms, July 2nd of the same year. As a British species, *Idya furcata* is moderately common.

IDYA MINOR, *T. & A. Scott.*

1896. *Idya minor*, T. & A. Scott (**84**), p. 228, pl. 4. figs. 11–17.

This is a distinctly smaller species than *I. furcata*, and appears to be a scarce form. The only gathering in which a few specimens were obtained was dredged in 2–3 fathoms, about fifty yards off West Point, Cape Flora, on June 18th, 1897.

Genus SCUTELLIDIUM, *Claus*, 1866.

SCUTELLIDIUM TISBOIDES, *Claus.*

1866. *Scutellidium tisboides*, Claus (**24**), p. 21, pl. 4. figs. 8–15.

Several specimens of this species occurred in the same gathering with *Idya minor*, but in no other. It is a moderately large and easily recognized species. It is widely distributed, but apparently not very common. It is one of the rarer of the British species.

Family ASCOMYZONTIDÆ.

Genus DERMATOMYZON, *Claus*, 1889.

DERMATOMYZON NIGRIPES (*Brady & Robertson*).

1875. *Cyclopicera nigripes*, Brady & Robertson (**45**), p. 197.

This species was very rare in the Franz-Josef Land collections. The only gathering in which it was observed was one collected off East Glacier, Cape Flora, and which contained several other interesting species, such as *Munna Fabricii* and *Pleurogonium*. The British distribution of *Dermatomyzon nigripes* extends to the Shetland Islands. Dr. Giesbrecht refers doubtfully to the occurrence at Spitzbergen of this species.

Genus Myzopontius, *Giesbrecht*, 1895.

Myzopontius pungens, *Giesbrecht*. (Pl. 9. figs. 1–10.)

1895. *Myzopontius pungens*, Giesbrecht (53), p. 182.

Description of the female.—Thorax broadly ovate, being about one-third longer than broad; the abdomen is narrow and fully half the length of the thorax; "thoracic segments scarcely produced into lateral processes, neither are the abdominal" (fig. 1). Antennules short, 12-jointed; the terminal joint is elongate, being fully twice the length of the penultimate one and bearing an asthetask near the distal end (fig. 2); the formula shows approximately the proportional lengths of all the joints:—

Proportional lengths of the joints	13	12	6	6	5	5	9	6	8	8	11	25
Numbers of the joints	1	2	3	4	5	6	7	8	9	10	11	12.

Antennæ (Pl. 9. fig. 3) 4-jointed; third joint short, secondary branch very small. Mandibles (Pl. 9. fig. 4) in the form of long, slender stylets. Maxillæ (fig. 5) furnished with two lobes: inner short, oval, and bearing one long and one short apical seta; outer lobe elongate and narrow, and provided with two apical setæ of moderate length. The anterior foot-jaws (fig. 6) are armed with very long and curved terminal claws. The posterior foot-jaws are long and slender (fig. 7); the second joint is elongate, but the last three are shorter and narrower, and the terminal claw is moderately stout and about equal in length to the last three joints. The first four pairs of swimming-feet are somewhat similar in structure, and have both branches 3-jointed; in the first pair (fig. 8) the end-joints of the outer branches are armed with three spines and five plumose setæ; the end-joints of the inner branches have one plumose seta on the outer margin, three on the inner margin, and two at the apex, while the second joints are furnished with two setæ, and the first joints with one on the inner margin. The end-joints of the outer branches of the fourth pair (fig. 9) are furnished with four spines and five setæ; the number of setæ on the inner branches is similar to that on the inner branches of the first pair, except that there are only two setæ on the inner margin of the end-joint, and the inner one of the apical setæ is replaced by a slender sabre-like spine. Fifth pair (fig. 10) small, 1-jointed,

cylindrical, the length being about equal to twice the breadth, and furnished with three terminal hairs. The first segment of the abdomen is only slightly enlarged anteriorly, the second and third joints are both shorter than the last joint; the caudal furca are of moderate length, being about as long as the last two abdominal joints combined.

Hab. Off East Glacier and near Cape Gertrude, Northbrook Island. A few specimens only were obtained.

Remarks. There seems to be little doubt that this Franz-Josef Land species is identical with Dr. Giesbrecht's *Myzopontius pungens* from the Bay of Naples, so far as can be made out from the description alone. The Arctic specimens appear to be somewhat larger than those from Naples; the specimen figured measured 1·6 mm. ($\frac{1}{16}$ of an inch), whereas Dr. Giesbrecht gives 0·85 to 1·1 mm. as the size of the female.

Family Oncæadæ.

Genus Oncæa, *Philippi*, 1843.

Oncæa mediterranea (*Claus*).

1863. *Antaria mediterranea*, Claus (23), p. 159, pl. 30. figs. 1–7.

A few specimens of *Oncæa mediterranea* were obtained in a gathering collected about fifty yards off West Point, Cape Flora, in 2–3 fathoms, on June 4th, 1897. This Copepod appears to have a wide distribution; and it is also of interest to note that though Mr. Bruce obtained it in quite shallow water at Franz-Josef Land, it has, on the other hand, been found at considerable depths in the tropical seas. Dr. W. Giesbrecht records its occurrence at a depth of 4000 metres *, and I have obtained the same species in a gathering of micro-crustacea from the Gulf of Guinea collected at a depth of 360 fathoms †. What appears to be the same form was recorded from Spitzbergen by Dr. Lilljeborg in 1875 ‡.

* 'Pelagischen Copepoden des Golfes von Neapel,' p. 591.

† Trans. Linnean Society, 2nd ser. (Zool.), vol. vi. p. 118.

‡ "De under Svenska vetenskapliga Expeditionen till Spetsbergen 1872–1873 derstades samlade Hafs-Entomostraceer" (Öfvers. Akad. Förhandl. Stockholm, Aar 1875).

CIRRIPEDIA.

Family Balanidæ.

Genus Balanus, *Lister*.

Balanus porcatus, *da Costa*.

1788. *Balanus porcatus*, Em. da Costa (25), p. 249.

Several specimens of *Balanus porcatus* were included in the Franz-Josef Land collection; they were nearly all obtained in the vicinity of Cape Flora. They were obtained on floe-ice off Flora Cottage on 24th August, 1896, and others were collected near the same place in September. Other specimens were gathered off Cape Gertrude during June and July 1897, as well as some distance south-west of Elmwood, off Cape Flora, and in the vicinity of a glacier between Cape Flora and Cape Gertrude. It would thus appear that this species was more or less frequent all round the neighbourhood of Cape Flora.

Balanus crenatus, *Bruguière*.

1789. *Balanus crenatus*, Bruguière.

This *Balanus* was very rare in the Collection; the species was represented by only one specimen of the smooth variety, which was dredged in 8 fathoms off Cape Flora, July 1897.

Both species occur in the Glacial clays of Scotland: *B. porcatus* is frequently observed, but *B. crenatus* is scarcer.

Index to Species.

List of Works referred to in the preceding pages.

1. 1835. Baird, W.—Trans. Berwick. Nat. Club, vol. i.
1*a*. 1837. „ „ Mag. Zool. & Bot. vol. x.
2. 1845. „ „ Trans. Berwick. Nat. Club, vol. ii.
3. 1850. „ „ Nat. Hist. Brit. Entomostraca.
4. 1860. Boeck, A.—Forhandl. ved de Skand. Naturf. 8 de Møde.
5. 1864. „ „ Oversigt Norges Copepoder.
6. 1870. „ „ Crustacea Amphipoda borealia et arctica.
7. 1872. „ „ Nye Slægter og Arter af Saltvands-Copepoder.
8. 1852. Bosquet.—Descript. Entom. foss. terr. France et Belgique.
9. 1865. Brady, G. S.—Ann. & Mag. Nat. Hist. vol. xxvi.
10. 1866. „ „ Trans. Zool. Soc. vol. v.

11. 1866. Brady, G. S.—Brit. Assoc. Report.
12. 1868. „ „ Monogr. Recent Brit. Ostracoda. (Trans. Linn. Soc. vol. xxvi.)
13. 1868. „ „ Ann. & Mag. Nat. Hist. ser. 4, vol. ii.
14. 1878–80. „ „ Monogr. British Copepoda. (Ray Society.)
15. 1881. Brady, H. B.—On some Arctic Foraminifera from Soundings obtained on the Austro-Hungarian North Polar Expedition of 1872–74. (Ann. & Mag. Nat. Hist. ser. 5, vol viii. pp. 393–418; contains notes on Ostracoda.)
16. 1874. Brady, Crosskey, & Robertson.—Monogr. Post-Tertiary Entom. Scotland, including specimens from England and Ireland. (Palæontographical Society.)
17. 1889–96. Brady & Norman.—Monogr. Marine and Freshwater Ostracoda of North Atlantic and North-western Europe. (Trans. Roy. Irish Acad.)
18. 1872. Brady & Robertson. — Ann. & Mag. Nat. Hist. ser. 4, vol. ix.
19. 1872. „ „ Brit. Assoc. Report.
20. 1873. „ „ Ann. & Mag. Nat. Hist. ser. 4, vol. xii.
21. 1874. „ „ Ann. & Mag. Nat. Hist. ser. 4, vol. xiii.
22. 1875. „ „ Brit. Assoc. Report.
23. 1863. Claus, C.—Die freilebenden Copepoden, mit besonderer Berücksichtigung der Fauna Deutschlands, der Nordsee und des Mittelmeeres.
24. 1866. Claus, C.—Die Copepoden-Fauna von Nizza.
25. 1778. da Costa, Emanuel.—Hist. Nat. Test Brit.
26. 1837. Edwards, M.—Hist. Nat. des Crustacés, tom. i. & ii.
27. 1779. Fabricius, J. C. — Reise nach Norwegen, mit Bemerkungen aus der Naturgeschichte und Oekonomie. Hamburg, 1779.
28. 1793. Fabricius, J. C.—Systema Entomologiæ, 2 vols.
28*a*. 1780. Fabricius, O.—Fauna Grœnlandica.
29. 1895. Giard & Bonnier. — Contrib. à l'Étude des Épecarides (xx.). (Bull. Scientif. de la France et de la Belgique, vol. xxv.)

30. 1892. Giesbrecht, W.—Pelagischen Copepoden des Golfes von Neapel.
31. 1895. „ „ Ann. & Mag. Nat. Hist. ser. 6, vol. xvi.
32. 1866. Goës, A. — Crustacea Amphipoda maris Spetsbergiani. (Öfvers. Kgl. Sv. Vet.-Akad. Förhandl. 1865.)
33. 1842. Goodsir, H.—Edinb. New Philosophical Journal, vol. xxxviii.
33*a*. 1845. „ „ Ann. & Mag. Nat. Hist. vol. xvi.
34. 1889. Gray, R. — Notes on a Voyage to the Greenland Seas in 1888. (The Zoologist, January–March 1889.)
35. 1765. Gunner, J. E.—Nogle smaa rare og meestendelen nye Norske Söedyr. (Act. Hafn. x.)
36. 1887. Hansen, H. J. — Malacostraca marina Grœnlandiæ occidentalis.
37. 1878. Heller, C. — Die Crust., Pycnog. u. Tunicaten d. kaiserl.-könig. Oesterr. Ungar. Nordpol.-Exped.
38. 1874. Heuglin, Th. von.—Reisen nach dem Nordpolarmeer.
39. 1856. Jones, T. R.—Monogr. Tertiary Entomostraca of England. (Palæontographical Society.)
40. 1889. Jones, T. R., & C. D. Sherborn.—Supplementary Monogr. Tert. Entomostr. England. (Palæontographical Society.)
41. 1838. Kröyer, H.—Grönlands Amfipoder.
42. 1841. „ „ Udsigt nord. Art. Hippol. (Naturh. Tidsskr. iii., xiii.)
43. 1842. „ „ Mon. Fremst. af Slægt. Hippolyte's nordiske Arter.
44. 1842. „ „ Voy. en Scand., Crust.
45. 1842. „ „ Nye nord. Slægt. og Art. af Amfip. (Nat. Tidsskr. 1 R., B. 4.)
46. 1845. „ „ Karcin. Bidr. (Nat. Tidsskr. 2 R., B. 1.)
47. 1846. „ „ Voy. en Scand., Zoology.
48. 1778. Lepechin.—Act. Acad. Sci. Imp. Petrop.
49. 1865. Lilljeborg, W.—Bidrag t. Kännedom. om de inom Sver. och Norr. förek. Crust. af Tan. fam. (Ups. Univ. Årsskr., Math. og Naturv. vol. i.)
50. 1766. Linné.—Systema Naturæ, ed. 12.

51. 1854. Lubbock, Sir J. — On some Arctic Species of Calanidæ. (Ann. & Mag. Nat. Hist. ser. 2, vol. xiv. p. 125.)

52. 1878. Miers, E. J.—Arctic Crustacea, with notes on the Copepoda by Rev. A. M. Norman, and on the Ostracoda by G. S. Brady. (Voyage to the Polar Sea in H.M. ships 'Alert' and 'Discovery,' 1875–76, under Captain Sir G. S. Nares, Vol. ii. Appendix no. vii.)

53. 1880. Miers, E. J.—On a small collection of Crustacea made by Edward Whymper, chiefly in the North Greenland seas. (Journ. Linn. Soc., Zool. xv. pp. 59–73.)

53*a*. 1815. Montagu.—Linn. Trans. vol. xi. pp. 1–26.

54. 1893. Mrazek.—Zoologische Jahrbücher.

55. 1776. Müller, O. F.—Zool. Dan. Prodromus.

56. 1862. Norman, A. M.—Ann. & Mag. Nat. Hist. vol. ix.

57. 1864. „ „ Brit. Assoc. Report.

58. 1865. „ „ Nat. Hist. Trans. Northumberland and Durham, vol. i.

59. 1868. „ „ Brit. Assoc. Report.

60. 1876. Norman, Rev. A. M.—On some Crustacea and some other Groups of Invertebrates obtained by the 'Valorous' Expedition to Greenland and Davis Straits in 1875. (In Report on the Zoology of the Expedition by Dr. J. Gwyn Jeffreys, F.R.S., and Dr. Carpenter, C.B., F.R.S., Proc. Roy. Soc. vol. xxv.)

61. 1835. Owen.—Appendix to Ross's Second Voyage in search of a North-west Passage.

61*a*. 1774. Phipps.—Voyage au Pôle boréal.

62. 1898. Richard, Jules.—Sur la Faune des Eaux douces explorées en 1898 pendant la Campagne du yacht 'Princesse Alice.'

63. 1883. Robertson, D.—On the Post-tertiary beds at Garvel Park, Greenock. (Trans. Geol. Soc. Glasgow, vol. vii. pt. 1.)

64. 1888–92. „ „ Amphipoda and Isopoda of the Firth of Clyde, and Supplement.

65. 1824. Sabine. — Suppl. to Appendix of Captain Parry's Voyage.
66. 1854. Sars, M.—Christ. Vid.-Selsk. Forhandl. (1854).
66*a*. 1858. „ „ „ „ „ „ (1858).
67. 1860. „ „ „ „ „ „ (1860).
68. 1863. Sars, G. O.— Om en i Somm. 1862 foret. zool. Reise Christiania.
69. 1865. „ „ Om den aberr. Krebsdyrg. Cumacea, og d. nord. Art. (Forh. i Vid.-Selsk. i Christiania, 1864.)
70. 1865. „ „ Oversigt af Norges marine Copepoder.
71. 1865. „ „ Beretn. om en i Somm. 1865 foret. zool. Reise ved Kyst. af Christianias og Christiansands Stifter.
72. 1880. „ „ Revision af Gruppen Isopoda Chelifera.
73. 1883. „ „ Oversigt af Norges Crustaceer.
74. 1885. „ „ Norweg. North-Atlantic Expedition—Crustacea.
75. 1890–95. „ „ An account of the Crustacea of Norway: Vol. i., Amphipoda.
76. 1896–96. „ „ *Op. cit.* Vol. ii. parts i–viii, Isopoda.
77. 1892–98. Schmeil, Dr. Otto.—Deutschlands freilebende Süsswasser-Copepoden.
78. 1898. „ „ „ *Op. cit.*, Nachtrag.
79. 1894. Scott, T. — Twelfth Annual Report, Fishery Board for Scotland (pt. iii.).
80. 1895. „ „ Thirteenth Ann. Rept. Fish. Board for Scotl. (pt. iii.).
81. 1897. „ „ Fourteenth Ann. Rept. Fish. Board for Scotl. (pt. iii.).
82. 1897. „ „ The Marine Fishes and Invertebrates of Loch Fyne. (Fifteenth Ann. Rept. Fish. Board for Scotl., part iii.)
83. 1893. Scott, T. & A.—On some new or rare Crustacea from Scotland. (Ann. & Mag. Nat. Hist. ser. 6, vol. xii.)
84. 1896. „ „ A Revision of the genera *Bradya* and *Ectinosoma*. (Trans. Linn. Soc. ser. 2, vol. vi.)
85. 1896. „ „ Annals of Scottish Natural History.

86. 1885. Scott, T., & J. Steel.—Notes on the Occurrence of *Leda arctica* (Gray), *Lyonsia arenosa* (Möller), and other organic remains in the Post-pliocene clays of Garvel Park, Greenock. (Trans. Geol. Soc. Glasgow, vol. vii. pt. ii.)

87. 1894. Stebbing, T. R. R.—Amphipoda collected during the voyage of the 'Willem Barents' in the Arctic Seas in the years 1880–84. (Bijdragen tot de Dierkunde mitgegeven door het Koninklijk Zoologisch Genootschap "Natura Artis Magistra" te Amsterdam, Afl. 17.)

88. 1853. Stimpson.—Marine Invert. Grand Manan. (Smiths. Contr. to Knowl. vol. vi.)

EXPLANATION OF THE PLATES.

Plate 3.

Fig. 1. *Spirontocaris Gaimardii*, rostrum, enlarged.
2. „ „ telson, enlarged.
3. (?) „ *Phipsii*, rostrum, enlarged.
4. „ „ telson, enlarged.
5. *Typhlotanais finmarchicus*, superior and inferior antennæ, enlarged.
6. „ „ one of the sixth pair of pereiopoda, enlarged.
7. „ „ one of the pair of uropoda, enlarged.
8. *Pseudotanais forcipatus*, one of the chelipeds, enlarged.
9. „ „ one of the pair of uropoda, enlarged.
10. *Munna Fabricii*, one of the antennules, enlarged.
11. „ „ one of the second pair of pereiopoda, enlarged.
12. „ *Kröyeri*, one of the antennules, enlarged.
13. „ „ one of the antennæ, enlarged.
14. „ „ one of the second pair of pereiopoda, enlarged.
15. *Pleurogonium spinosissimum*, dorsal view, enlarged.
16. *Candona Harmsworthi*, lateral view, enlarged.
17. „ „ dorsal view, enlarged.

Plate 4.

Fig. 1. (?) *Cyclocypris globosa*, lateral view, enlarged.
2. *Herpetocypris arctica*, lateral view, enlarged.
3. „ „ dorsal view, enlarged.
4. „ „ one of the antennules, enlarged.
5. „ „ one of the antennæ, enlarged.
6. „ „ post-abdomen, enlarged.

Fig. 7. *Herpetocypris dubia*, lateral view, enlarged.
8. „ „ dorsal view, enlarged.
9. „ „ one of the antennules, enlarged.
10. „ „ one of the antennæ, enlarged.
11. „ „ post-abdomen, enlarged.
12. *Pontocypris hyperborea*, lateral view, × 40.
13. „ „ dorsal view, × 40.
14. „ „ ventral view, × 40.
15. „ „ end view, × 40.
16. *Metridia longa*, fifth pair of thoracic feet (♂, right foot), enlarged.
17. „ „ „ „ „ (♂, left foot), enlarged.
18. *Oithona similis*, one of third pair of thoracic feet (♀), enlarged.
19. „ „ one of fourth pair of thoracic feet (♀), enlarged.

Plate 5.

Fig. 1. *Dactylopus tenuiremis*, one of the antennules, × 253.
2. „ „ posterior foot-jaw, × 253.
3. „ „ one of the first pair of swimming-feet, × 253.
4. „ „ one of the fifth pair, × 190.
5. „ *longirostris*, one of the antennules, × 253.
6. „ „ posterior foot-jaw, × 253.
7. „ „ one of the first pair of swimming-feet, × 253.
8. „ „ one of the fifth pair, × 190.
9. „ *Strömii*, var. *arcticus*, female, lateral view, × 27.
10. „ „ „ one of the antennules, × 127.
11. „ „ „ posterior foot-jaw, × 253.
12. „ „ „ one of the first pair of swimming-feet, × 127.
13. „ „ „ one of the fifth pair, × 95.
14. *Delavalia arctica*, posterior foot-jaw, × 380.
15. *Enhydrosoma curvatum*, one of the fifth pair of feet, × 380.

Plate 6.

Fig. 1. *Cyclops Brucei*, female, dorsal view, × 27.
2. „ „ one of the antennules, × 95.
3. „ „ one of the first pair of swimming-feet, enlarged.
4. „ „ one of the fourth pair, enlarged.
5. „ „ one of the fifth pair, enlarged.
6. „ „ abdomen and caudal furca, enlarged.
7. *Delavalia arctica*, female, dorsal view, × 27.
8. „ „ one of the antennules, × 95.
9. „ one of the first pair of swimming-feet, × 127.
10. „ „ one of the fourth pair, × 63.
11. „ „ one of the fifth pair, × 95.

Fig. 12. *Maraenobiotus Vejdovskyi*, female, lateral view, × 86.
13. „ „ one of the antennules, × 253.
14. „ „ one of the maudibles, greatly enlarged.
15. „ posterior foot-jaw, × 803.
16. „ „ one of the first pair of swimming-feet, × 253.
17. „ „ one of the fifth pair, × 760.
18. (?) *Canthocamptus parvus*, female, lateral view, × 80.
19. „ „ one of the antennules, × 570.
20. „ „ one of the antennæ, × 570.
21. „ „ one of the mandibles, × 380.
22. „ „ one of the first pair of swimming-feet, × 253.
23. „ „ one of the fourth pair, × 253.
24. „ „ one of the fifth pair, × 253.

Plate 7.

Fig. 1. *Laophonte perplexa*, female, lateral view, × 21.
2. „ „ one of the antennules, × 190.
3. „ „ posterior foot-jaw, × 253.
4. „ „ one of the first pair of swimming-feet, × 253.
5. „ „ one of the fourth pair, × 190.
6. „ „ one of the fifth pair, × 190.
7. „ „ caudal furca, × 95.
8. *Thalestris polaris*, female, lateral view, × 32.
9. „ „ one of the antennules, × 95.
10. „ „ posterior foot-jaw, × 95.
11. „ „ one of the first pair of swimming-feet, × 84.
12. „ „ one of the fourth pair, × 63.
13. „ „ one of the fifth pair, × 84.
14. „ „ inner branch of second pair (♂), × 126.
15. „ „ one of the fifth pair (♂), × 126.
16. „ „ caudal furca, × 40.
17. „ *frigida*, female, lateral view, × 27.
18. „ „ one of the antennules, × 95.
19. „ „ one of the posterior foot-jaws, × 127.
20. „ „ one of the first pair of swimming-feet, × 63.
21. „ „ one of the fourth pair, × 63.
22. „ „ one of the fifth pair, × 63.
23. „ „ inner branch of second pair (♂), × 126.

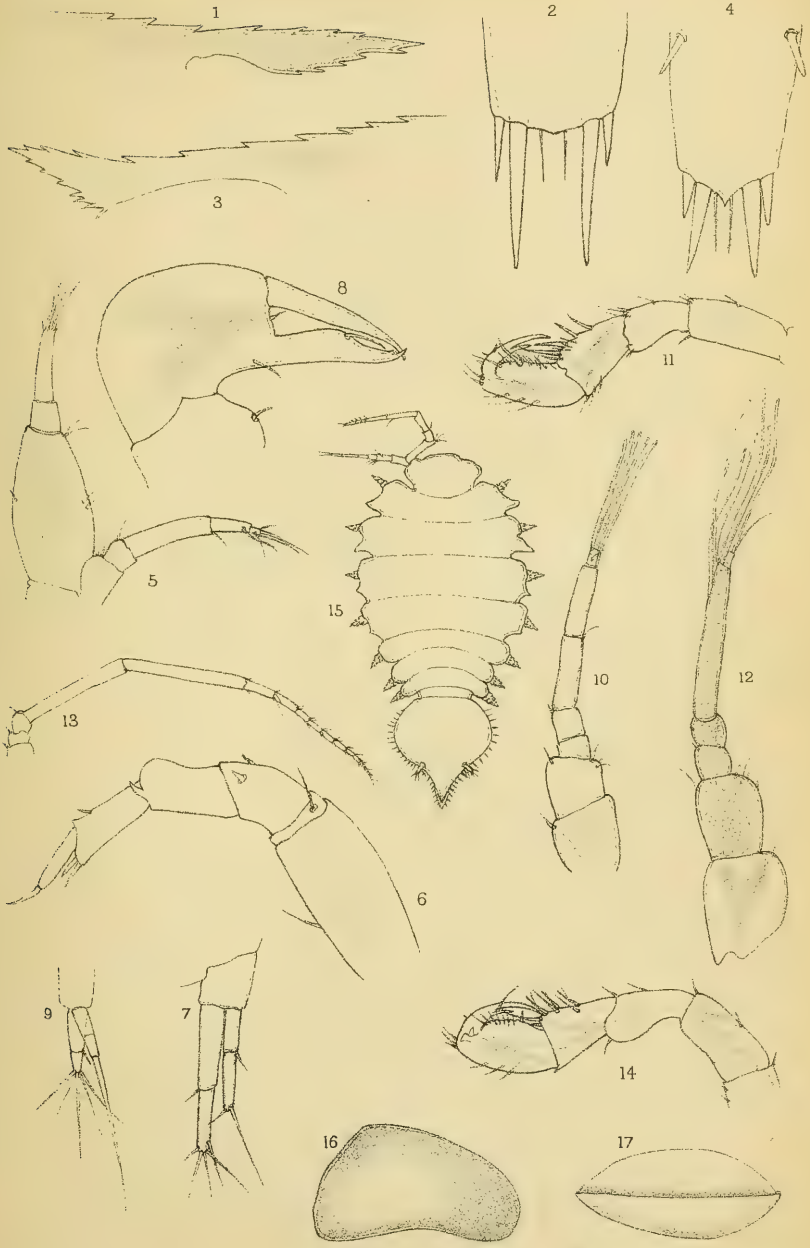
Plate 8.

Fig. 1. *Thalestris frigida*, one of the fifth pair of thoracic feet (♂), × 126.
2. „ „ caudal furca, × 80.
3. „ *Jacksoni*, female, lateral view, × 18.
4. „ „ one of the antennules, × 84.
5. „ „ one of the posterior foot-jaws, × 95.

Fig. 6. *Thalestris Jacksoni*, one of the first pair of swimming-feet, × 63.
7. „ „ one of the fourth pair, × 47.
8. „ „ one of the fifth pair, × 63.
9. „ „ caudal furca, × 40.
10. *Harpacticus chelifer*, one of the female antennules, × 126.
11. „ „ one of the posterior foot-jaws (♀), × 126.
12. „ „ one of the first pair of swimming-feet, × 95.
13. „ „ one of the fifth pair (♀), × 126.
14. „ „ var. *arcticus*, one of the female antennules, × 126.
15. „ „ „ one of the posterior foot-jaws (♀), × 126.
16. „ „ „ one of the first pair of swimming-feet, × 95.
17. „ „ „ one of the fifth pair (♀), × 126.

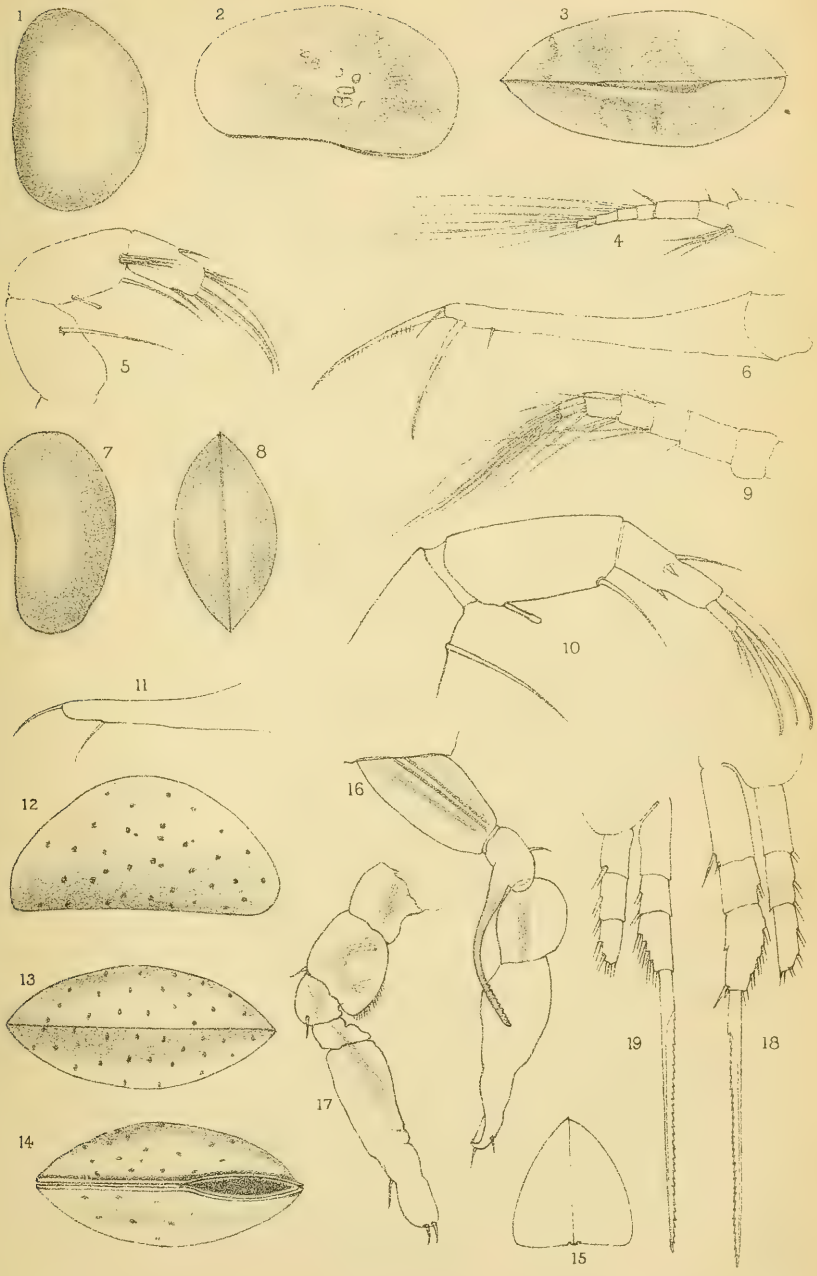
Plate 9.

Fig. 1. *Myzopontius pungens*, female, dorsal view, × 27.
2. „ „ one of the antennules (♀), × 84.
3. „ „ one of the antennæ, × 126.
4. „ „ mandible, × 95.
5. „ „ one of the maxillæ, × 126.
6. „ „ one of the anterior foot-jaws, × 95.
7. „ „ one of the posterior foot-jaws, × 95.
8. „ „ one of the first pair of swimming feet, × 84.
9. „ „ one of the fourth pair, × 84.
10. „ „ one of the fifth pair of thoracic feet, × 126.
11. *Hoplonyx similis*, one of the anterior coxal plates, enlarged.
12. „ „ one of the last pair of epimeral plates of metasome, enlarged.
13. „ „ telson, enlarged.
14. *Amathilla pinguis*, one of the last pair of epimeral plates of metasome, enlarged.
15. „ „ telson, × 85.
16. *Photis tenuicornis*, one of the first pair of gnathopods (♂), enlarged.
17. „ „ one of the second pair of gnathopods, enlarged.
18. *Ischyroceras* (?) *anguipes*, one of the second pair of gnathopods, enlarged.



T. Scott, del. J.T. Rennie Reid, Lith. Edin.

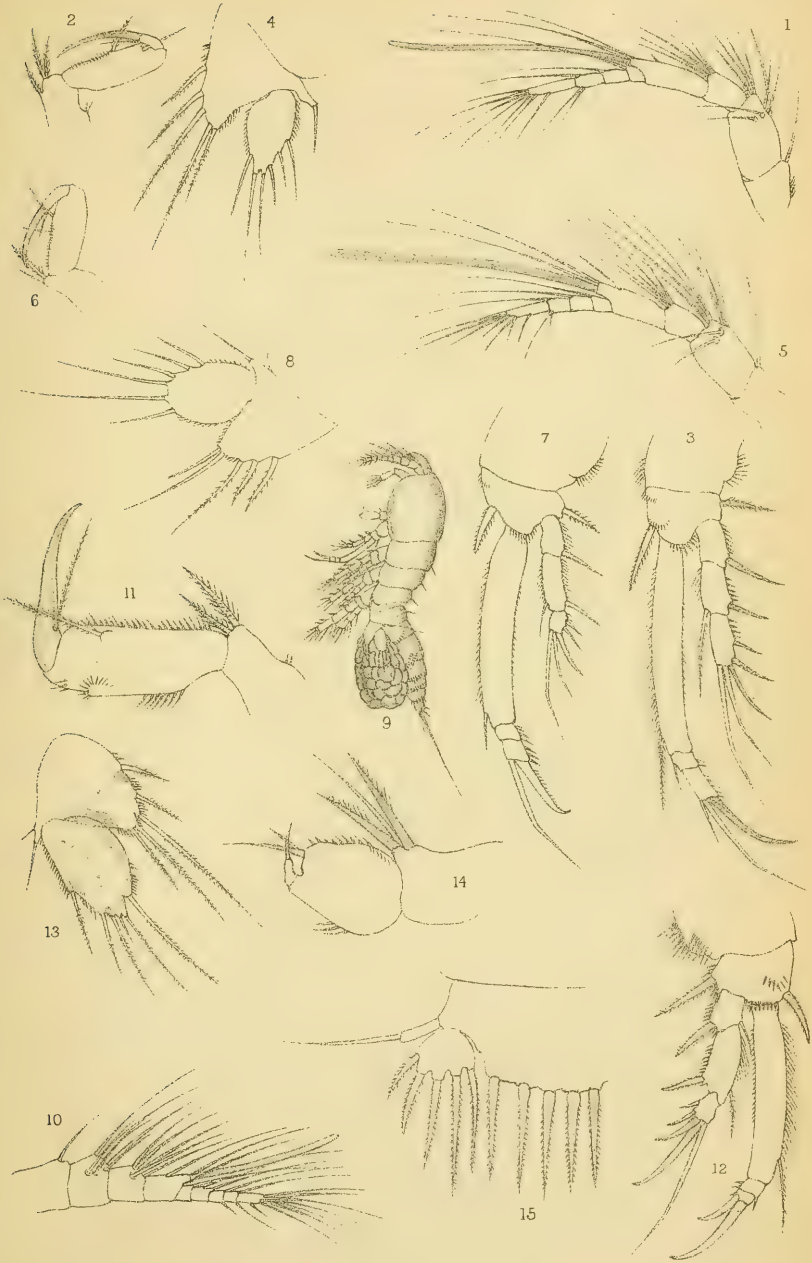
CRUSTACEA FROM FRANZ JOSEF LAND.



T. Scott, del.

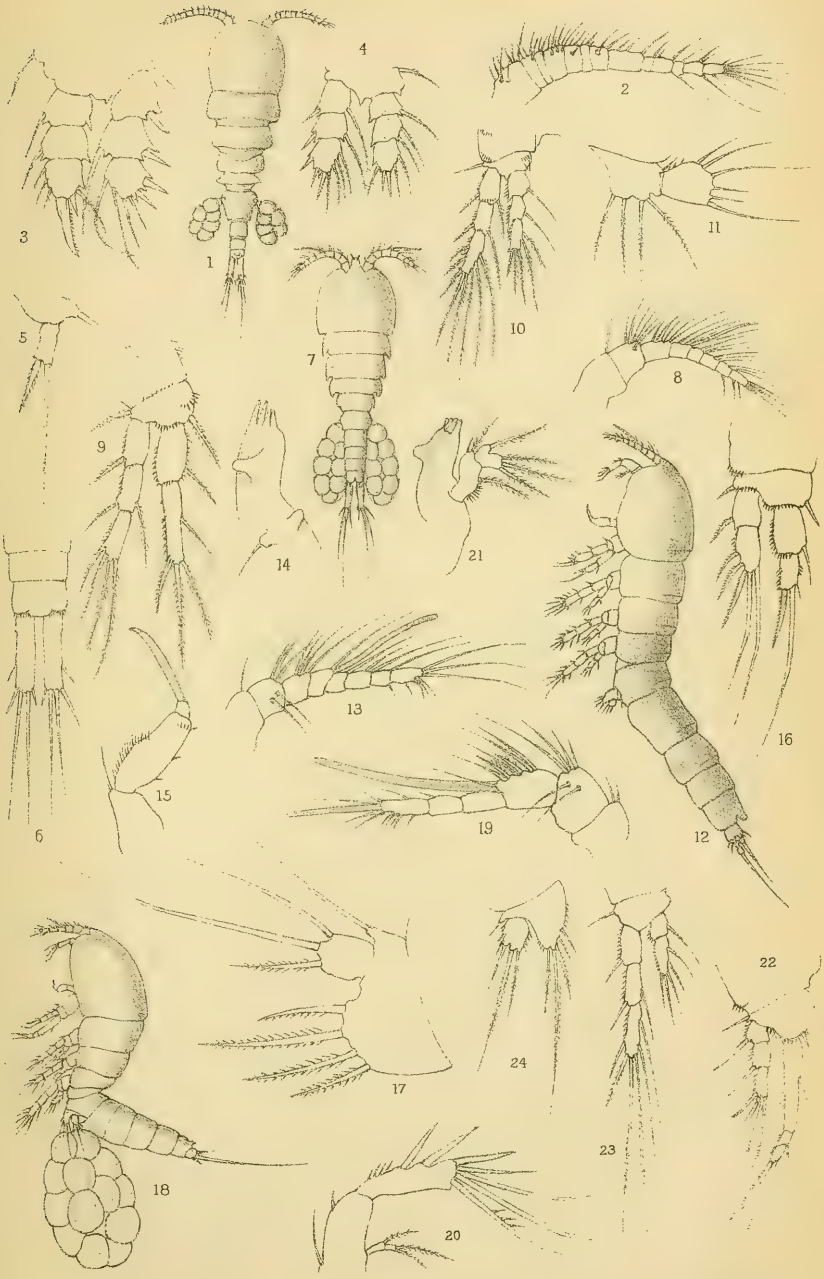
J.T. Rennie Reid, Lith. Edin^r

CRUSTACEA FROM FRANZ JOSEF LAND.



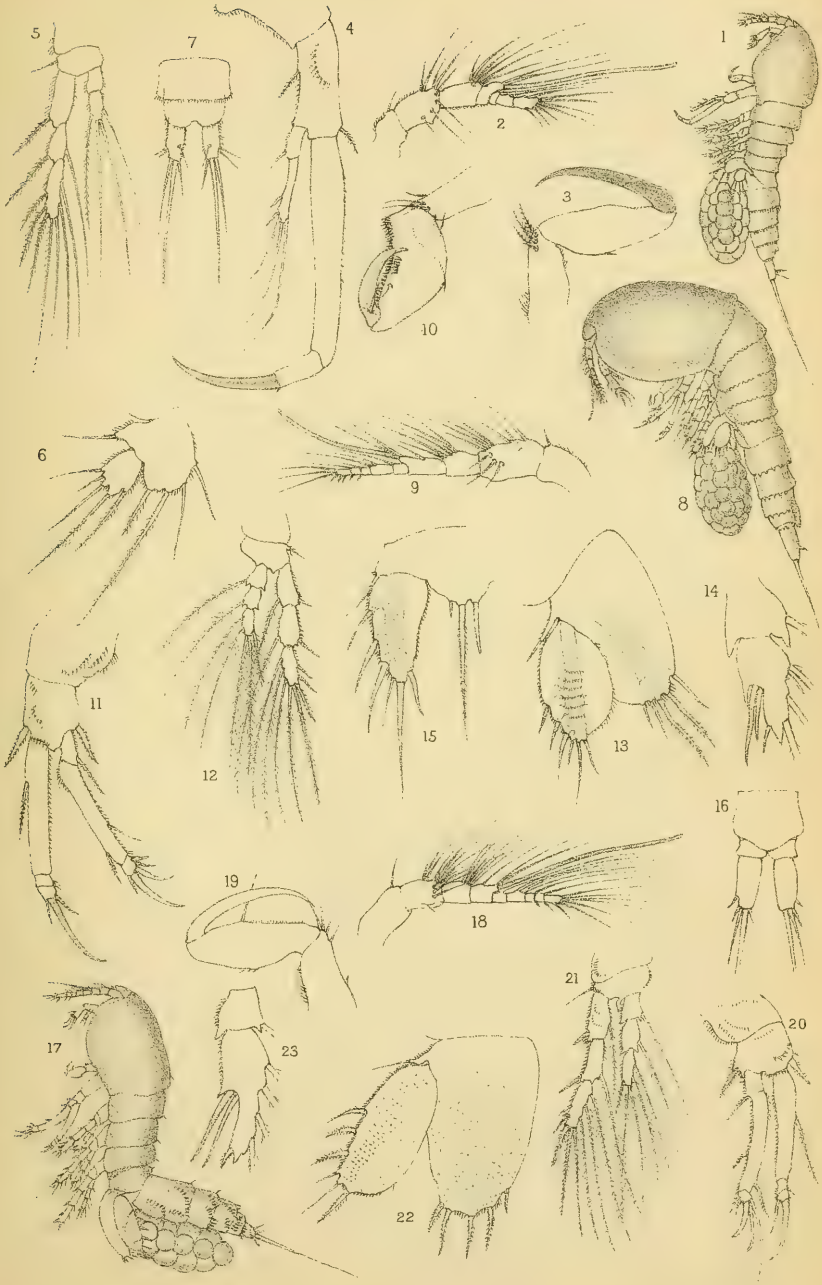
A. Scott, del. J.T. Rennie Reid, Lith. Edin.

CRUSTACEA FROM FRANZ JOSEF LAND



A. Scott, del. J.T.Rennie Reid, Lith. Edin.

CRUSTACEA FROM FRANZ JOSEF LAND



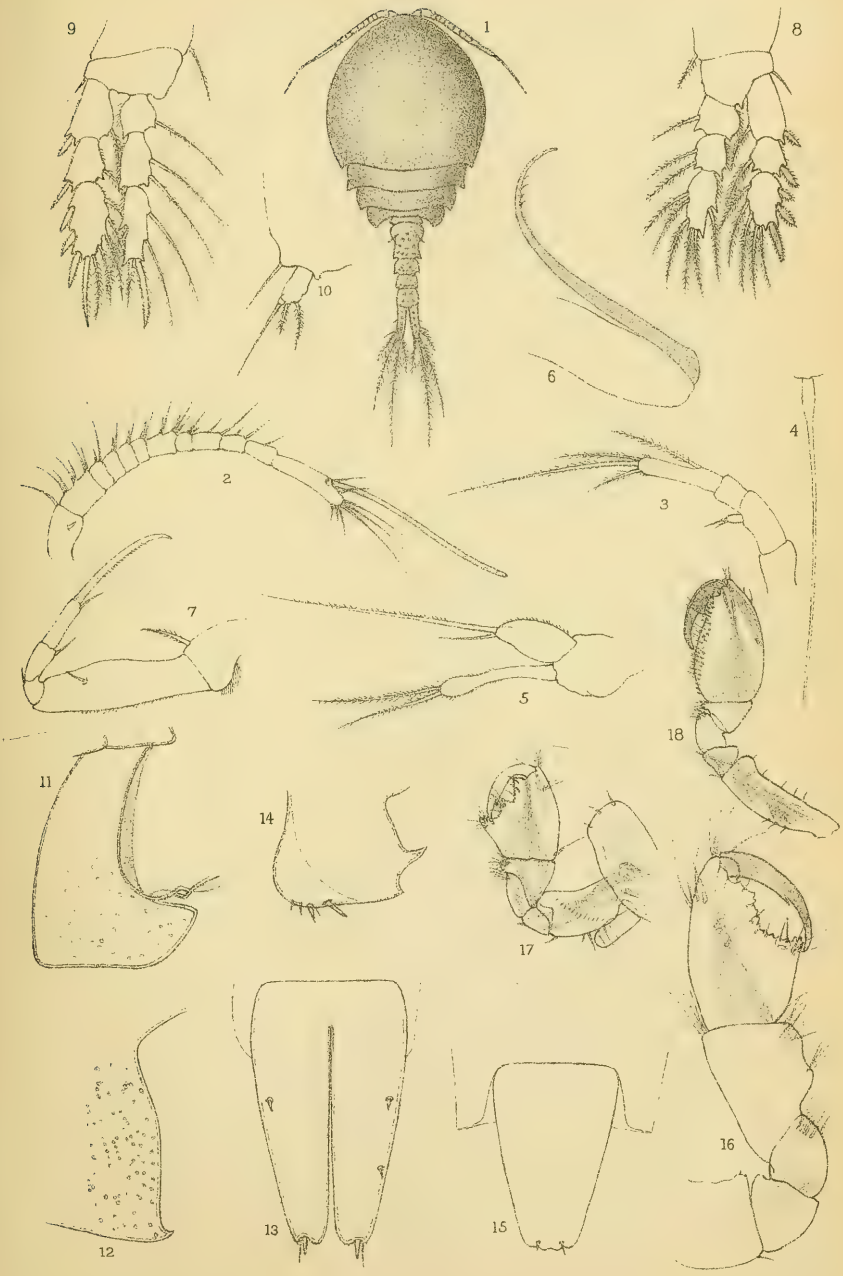
A. Scott, del.

J.T. Rennie Reid, Lith. Edin.

CRUSTACEA FROM FRANZ JOSEF LAND.

A. Scott, del. J.T. Rennie Reid, Lith. Edin.

CRUSTACEA FROM FRANZ JOSEF LAND.



Figs 1–10 A.S. del.
others T.S. del.

J.T. Rennie Reid, Lith. Edin.

CRUSTACEA FROM FRANZ JOSEF LAND.